WESTELL

WIRESPEED
DUAL CONNECT MODEM

USER GUIDE

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CONTENTS

1. Product Description 1
2. Safety Instructions 1
3. Regulatory Information 2
4. System Requirements 4
5. Hardware Features 5
6. Macintosh OS X 7
7. Basic Mode Operation 11
8. Expert Mode 28
9. Product Specifications 67
10. Software License Agreement 68
11. Publication Information 69

1. PRODUCT DESCRIPTION

Westell's WireSpeed™ Dual Connect Modem adds reliable, high-speed, Internet access to your existing home or office phone line. Your ADSL connection ends the hassles of dial-up modems and busy signals. Installation is easy ... no tools ... no headaches. Simply plug the Dual Connect Modem into the 10/100 Base-T or USB port of your PC, apply power, perform the simple software configuration, and connect your ADSL phone line to the Dual Connect Modem.

This Modem is capable of data rates hundreds of times faster than a traditional analog modem. But unlike analog modems, Westell's WireSpeed™ Dual Connect Modem allows you to use the same phone line for simultaneous voice/fax communications and high-speed Internet access, eliminating the need for dedicated phone lines for voice and data needs. The Plug and Play feature means that no user configuration is required.

2. SAFETY INSTRUCTIONS

Never install any telephone wiring during a lightning storm.

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.

WARNING

Risk of electric shock. Voltages up to 140 Vdc (with reference to ground) may be present on telecommunications circuits.

3. REGULATORY INFORMATION

3.1 FCC Compliance Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Federal Communication Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to a different circuit from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

PART 68 - COMPLIANCE REGISTRATION

This equipment (Dual Connect Modem) complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. A label on the bottom of this equipment contains, among other information, the Federal Communication Commission (FCC) registration number, the Ringer Equivalence Number (REN), and the product identifier. For products approved after July 23, 2001 the product identifier is in the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g. 03 is a REN of 0.3). The REN is used to determine the number of devices that may be connected to a telephone line. For earlier products, the REN is separately shown on the label. If requested, this number must be provided to the telephone company.

Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most, but no all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company

This equipment is designated to connect to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. An FCC compliant telephone cord and modular plug is provided with the equipment. See the Installation Information section of this User Guide for details.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instruction for details.

If this terminal equipment (Dual Connect Modem) causes harm to the telephone network, the telephone company may request you to disconnect the equipment until the problem is resolved. The telephone company will notify you in advance if temporary discontinuance of service is required. If advance notification is not practical, the telephone company will notify you as soon as possible. You will be advised of your right to file a complaint with the FCC if you believe such action is necessary.

If you experience trouble with this equipment (Dual Connect Modem), do not try to repair the equipment yourself. The equipment cannot be repaired in the field and must be returned to the Westell, Inc. Contact Westell Technical Support at telephone no. (630) 375-4500 for instructions on product return.

The telephone company may make changes to their facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice in order for you to make the modifications necessary to maintain uninterrupted service.

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Dual Connect Modem) does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

This equipment cannot be used on public coin phone service provided by the telephone company. Connection of this equipment to party line service is subject to state tariffs.

3.2 Canada Certification Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operations and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's satisfaction.

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specification. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specification were met. It does not imply that Industry Canada approved the equipment. The Ringer Equivalence Number (REN) is 0.0. The Ringer Equivalence Number that is assigned to each piece of terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local Telecommunication Company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Connection to a party line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Dual Connect Modem) does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

If you experience trouble with this equipment (Dual Connect Modem), do not try to repair the equipment yourself. The equipment cannot be repaired in the field and must be returned to the manufacturer. Repairs to certified equipment should be coordinated by a representative, and designated by the supplier. Contact Westell Technical Support at telephone no. (630) 375-4500 for instructions on product return.

The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal, metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

4. SYSTEM REQUIREMENTS

4.1 Minimum System Requirements for 10/100 Base-T/Ethernet Installation

The following system specifications are required for optimum performance of the Dual Connect Modem via 10/100 Base-T installation:

- Pentium® or equivalent and above class machines, Macintosh
- Microsoft® Windows® 95, 98, NT 4.0, 2000, or XP
- Computer Operating System CD-ROM on hand
- 32 MB RAM
- 10 MB of free hard drive space
- TCP/IP Protocol stack installed
- 10/100 Base-T Network Interface Card (NIC)

4.2 Minimum System Requirements for USB Installation

The following system specifications are required for optimum performance of the Dual Connect Modem via USB installation:

- Pentium® or equivalent and above class machines
- Microsoft® Windows® 98, ME, 2000, or XP installed
- Computer Operating System CD-ROM on hand
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 32 MB RAM
- 10 MB of free hard drive space
- USB Version 1.0 or 1.1 compliant bus
- An available USB Port

5. HARDWARE FEATURES

5.1 LED Indicators

The LED indicators are used to verify the unit's operation and status. LED states are described in Table 1.

Table 1. LED States and Descriptions

LED	State	Description
POWER	**Solid Green**	Power ON
	No Light	No Power
READY	**Slow Flashing Green**	Power ON and waiting for carrier detect signal (1 flash/sec)
	Moderate Flashing Green	Power ON and attempting synchronization (2 flashes/sec)
	Solid Green	Power ON and synchronized with ADSL line card
	Steady Red (less than 20 sec.)	Hardware power-up in process
	Flashing Yellow	Modem failed self-diagnostics
	Solid Yellow	Modem is in safe boot mode
	No Light	No Power
ETHERNET	**Solid Green**	Ethernet link established
	Flashing Green	Transmit or Receive Activity
	No Light	No link established
USB	**Solid Green**	USB link established
	Flashing Green	Transmit or Receive Activity
	No Light	No USB link established

5.2 Cable Connectors

The following items are located on the rear panel of the Modem. See Figure 1. Tables 2 through 5 list the connector types and pinout designations.

- DSL Connector (RJ-11)
- USB Connector
- Power Connector (Barrel)
- Reset Switch (push button)
- Ethernet Connector (RJ-45)

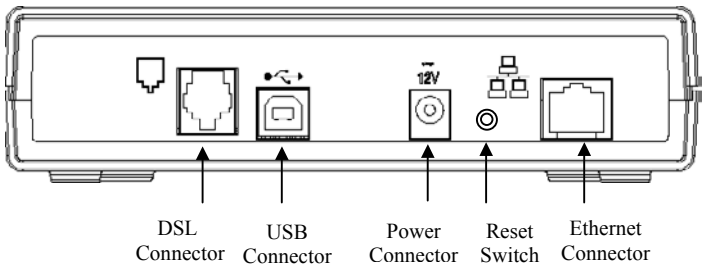


Figure 1. Dual Connect Modem Rear Panel

Table 2. Connector Descriptions

SYMBOL	NAME	TYPE	FUNCTION
	DSL	6-pin RJ-11 modular jack	Connects to an ADSL-equipped telephone jack or DSL connection of a POTS splitter.
	USB	4-pin USB Series B connector	Connects the USB device to the PC.
~ 12V	Power	Barrel connector	Power source.
	Ethernet	8-pin (RJ-45) modular jack	Connects the Ethernet device to the PC.

Table 3. DSL Pinouts

Pinout	Description
1, 2, 5, 6	Not Used
3	DSL Tip
4	DSL Ring

Table 4. USB Series B Connector Pinouts

Pin	Name	Description	Cable Color
1	VBUS/Vcc	5 Vdc	Red
2	D –	Data –	White
3	D +	Data +	Green
4	GND	Ground	Black

Table 5. Ethernet Pinouts

Pinout	Description
1	Rx+
2	Rx-
3	Tx+
4,5,7,8	Not Used
6	Tx-

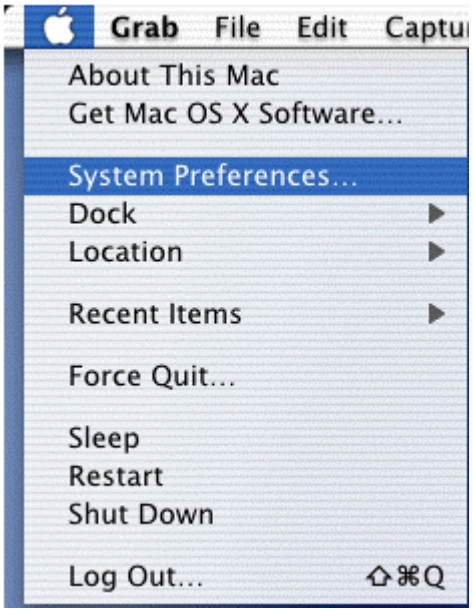
6. MACINTOSH OS X

This section provides instructions on how to use Macintosh Operating System 10 with the Westell WireSpeed Dual Connect Modem. Follow the instructions in this section to create a new network configuration for Macintosh OS X.

Note: The USB installation will not function for Macintosh Computers. Macintosh computers must use the Modem's Ethernet installation.

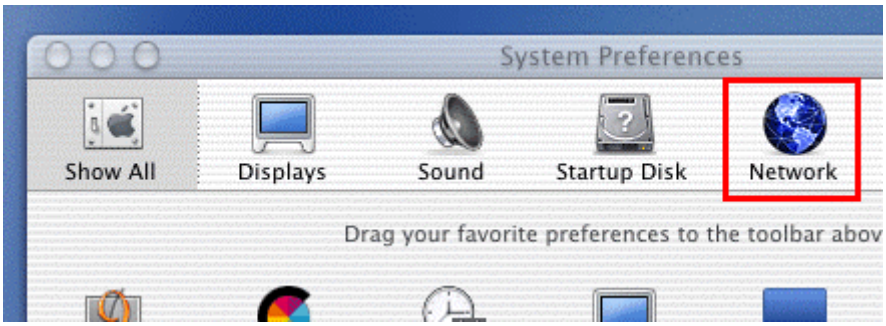
Open the System Preference Screen

After you have connected the Westell Dual Connect Modem to the Ethernet port of your Macintosh, the screen below will appear. Click on the "**Apple**" icon in the upper right corner of the screen and select **System Preferences**.



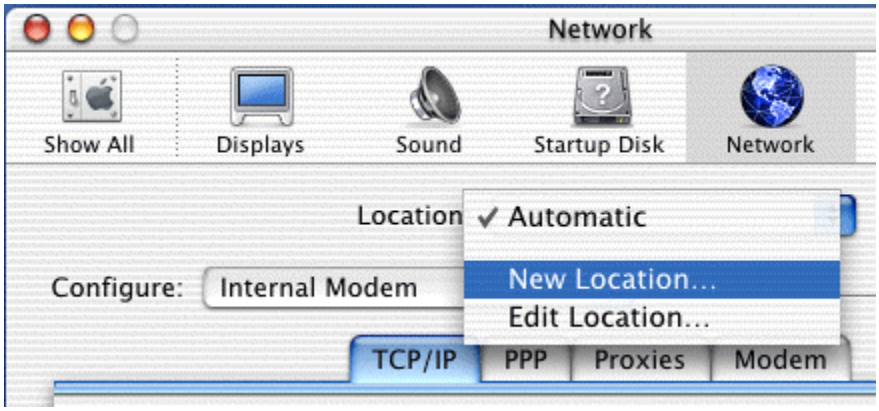
Choose the Network Preferences

After selecting **System Preferences…**, from the previous screen, the **System Preferences** screen will be displayed. From the **System Preferences** screen, click on the **Network** icon.



Create a New Location

After selecting the **Network** icon at the **System Preferences** screen, the **Network** screen will be displayed. Select **New Location** from the **Location** field.



Name the New Location

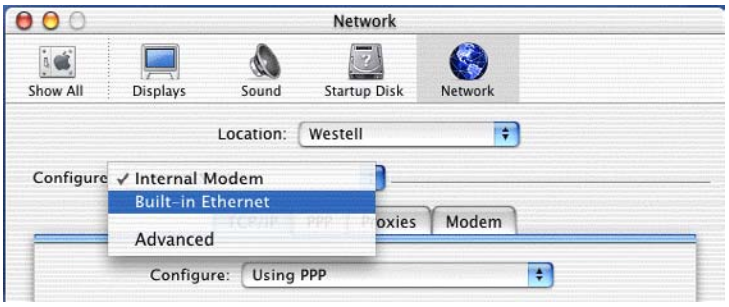
After selecting **New Location** from the **Network** screen, the following screen will be displayed. In the field labeled **Name your new location:**, change the text from "**Untitled**" to "**Westell**." Click **OK**.

Name your new location:
Westell
All users of this computer will be able to choose this location in the Apple menu without entering a password.
Cancel
OK

Select the Ethernet Configuration

After clicking **OK** in the previous step, the **Network** screen will be displayed. The **Network** screen shows the settings for the newly created location. From the **Configure** field in the **Network** screen, select **Built-in Ethernet**. Click **Save**.

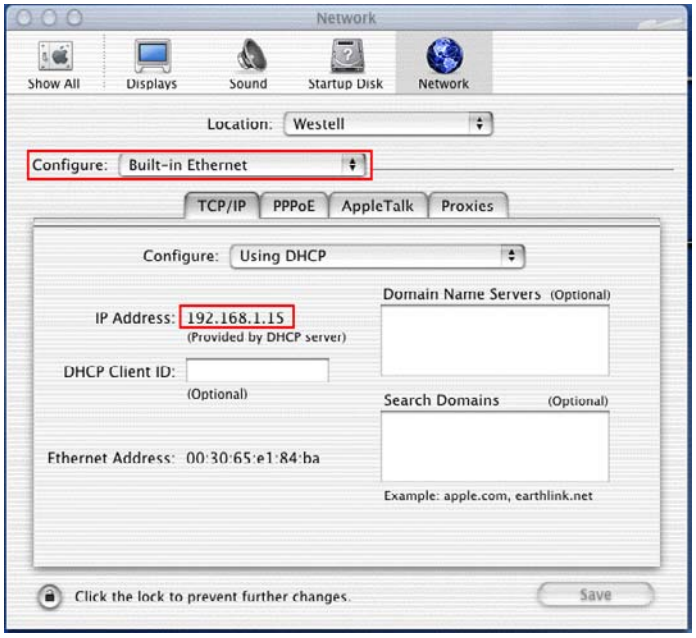
Note: Default settings for the Built-in Ethernet configuration are sufficient to operate the Dual Connect Modem.



Check the IP Connection

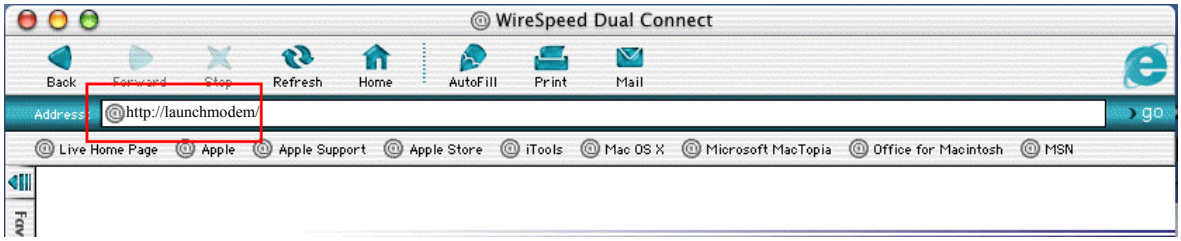
To verify that the computer is communicating with the Modem, follow the instructions below.

1. Go to the "**Apple**" icon in the upper right corner of the screen and select **System Preferences**.
2. From the **System Preferences screen**, click on the **Network** icon. The **Network** screen will be displayed.
3. From the **Configure** field in the **Network** screen, select **Built-in Ethernet**.
4. View the IP address field. An IP address that begins with **192.168.1** should be displayed. (NOTE: The DHCP server provides an IP address.) If the IP address is not displayed, check the Modem's wiring connection to the PC.

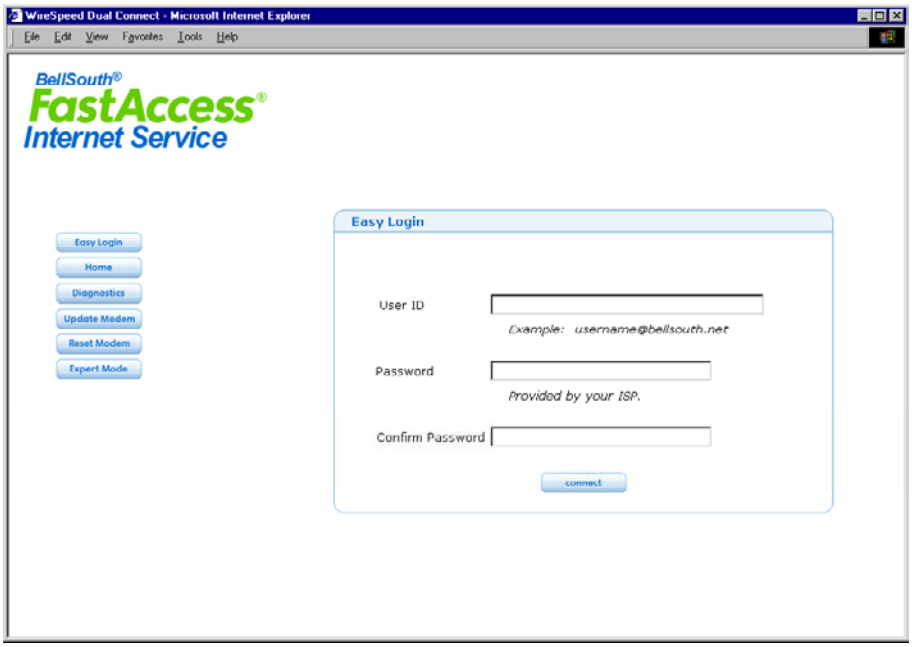


Create a User Account

In your Internet Explorer web browser address window, type **Http://launchmodem/ or Http://192.168.1.254**. Press enter on your keyboard.



The **Getting Started** screen will be displayed. You may now begin your Easy Login. Refer to section 7.1 of this User Guide for detailed instructions.

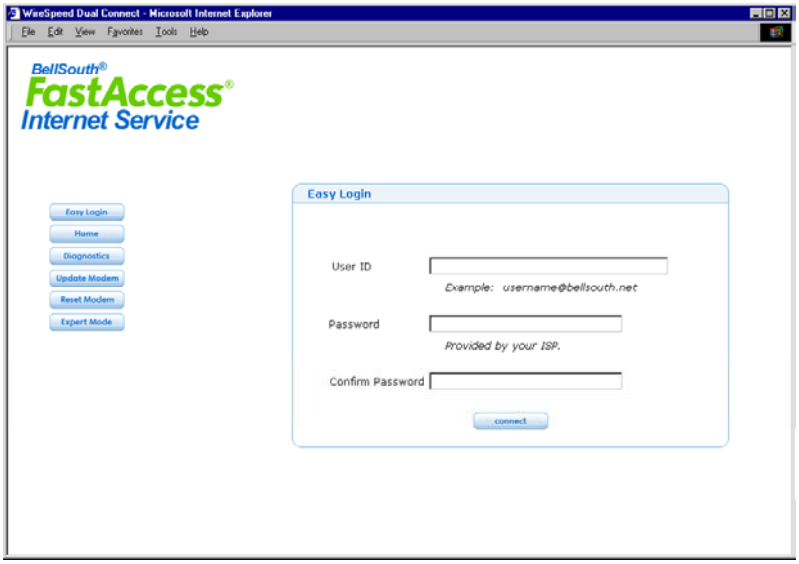


7. BASIC MODE OPERATION

This section details the Basic Mode operation of your Dual Connect Modem for quick and easy access to the Internet.

7.1 Easy Login

The following screen will appear when you click on the **Easy Login** menu button.



The **Easy Login** page allows you to log in to your BellSouth® FastAccess® Internet Service account and establish an Internet connection. Note: Before you can login into your account, you must obtain your **User ID** and **Password** from your Internet service provider.

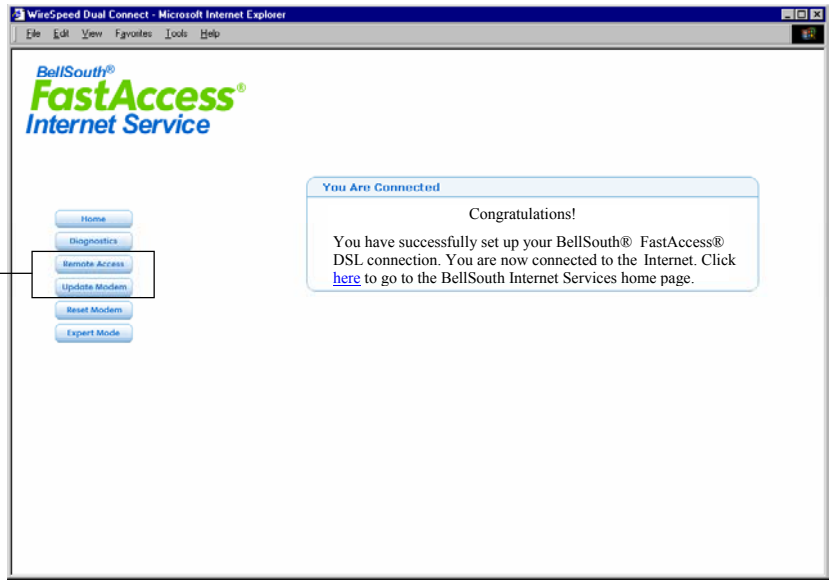
After installing the Dual Connect Modem, bring up your Web browser and type **http://launchmodem** in the browser's address window. Press **Enter** on your keyboard, and the **Easy Login** screen will appear. Type in your **User ID** and **Password** information. (User ID and Password information is required before you connect to the Internet.) At the **Confirm Password** field, type the identical value that you entered in the **Password** field. You are now ready to connect to the Internet. Click the **connect** button.

User ID	The User ID is provided by your Internet service provider. An example of the user name is username@bellsouth.net.
Password	The Password is provided by your Internet service provider.
Confirm Password	The identical value that you typed in the **Password** field.

If your connection succeeds, the **You Are Connected** screen will appear. This screens display a message that you have successfully set up your BellSouth® FastAccess® DSL connection. Click **here** to go to BellSouth Internet Services home page.

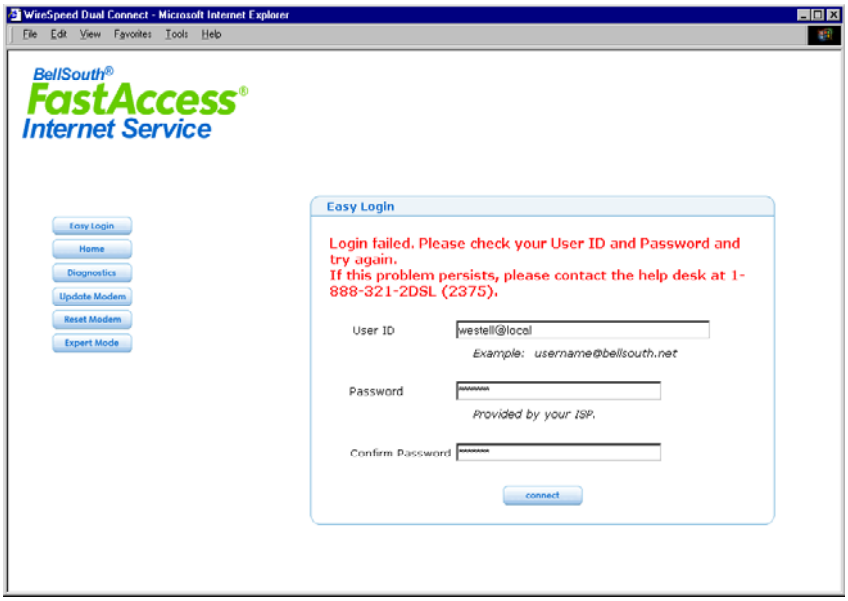
NOTE: If your connection fails, refer to the section 7.2 Connection Failures to troubleshoot the problem and establish a connection.

NOTE: Diagnostic and Remote Access menu options will not be available if you are in Bridge mode.


WireSpeed Dual Connect - Microsoft Internet Explorer
BellSouth®
FastAccess®
Internet Service
Home
Diagnostics
Remote Access
Update Modem
Reset Modem
Expert Mode
You Are Connected
Congratulations!
You have successfully set up your BellSouth® FastAccess® DSL connection. You are now connected to the Internet. Click here to go to the BellSouth Internet Services home page.

7.2 Connection Failures

If your login failed, the following screen will appear. Check the values that you entered into the **User ID** and **Password** fields. If you have checked the value in each field and are still unable to establish a connection, contact the BellSouth help desk at 1-888-321-2DSL (2375).

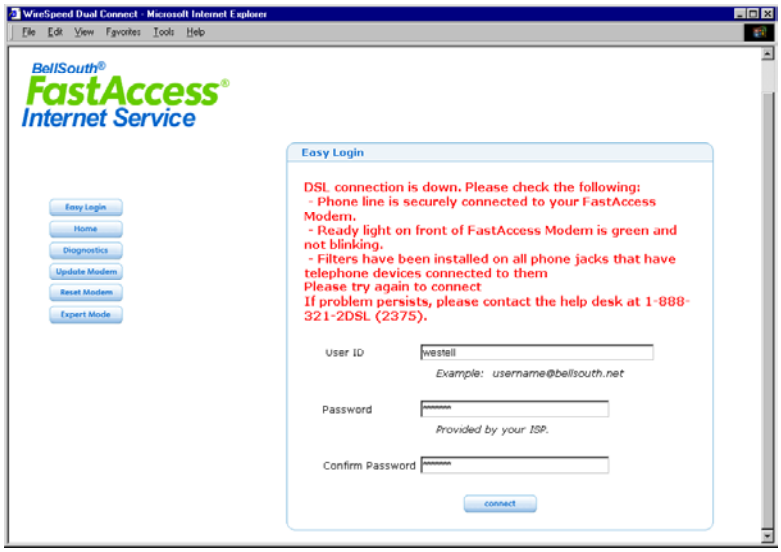


The following screen will appear if the value in your **Confirm Password** field is not identical to the value in your **Password** field. The **Password** and **Confirm Password** fields must contain identical values in order to establish a successful login. If you have checked the value in each field and are still unable to establish a connection, contact the BellSouth help desk at 1-888-321-2DSL (2375).

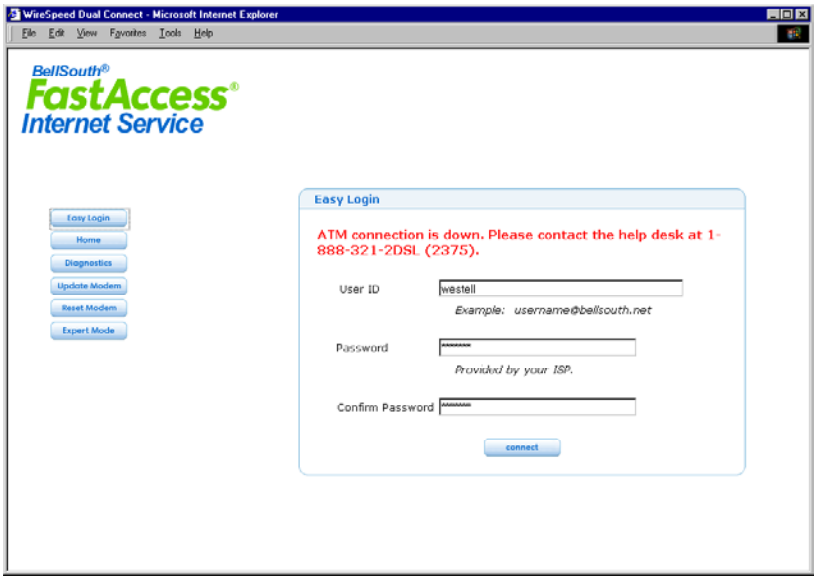
If your DSL connection is down, the following screen will appear.

- Check that the phone line is securely connected to your FastAccess modem.
- Check that the ready light on the front of your FastAccess modem is green and not blinking.
- Check that filters have been installed on all phone jacks that have telephone devices connected to them.

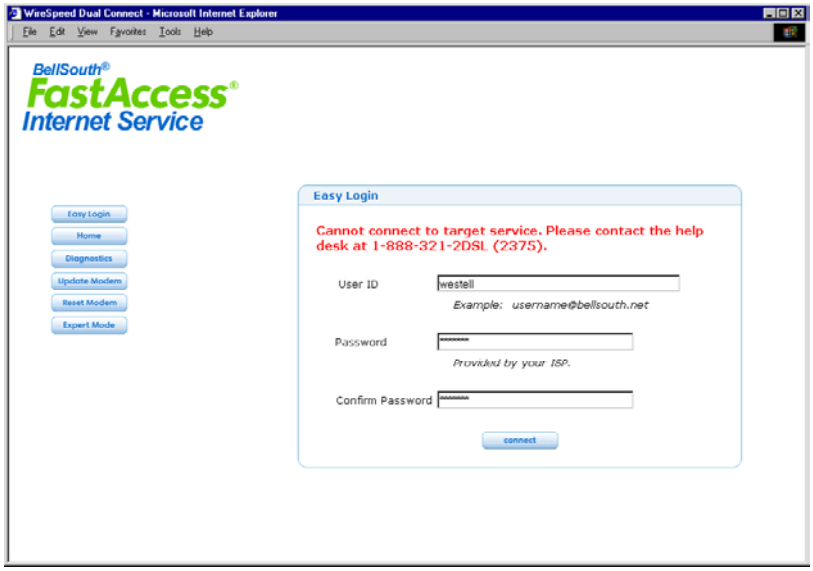
If the problem persists, contact the BellSouth help desk at 1-888-321-2DSL (2375).


WireSpeed Dual Connect - Microsoft Internet Explorer
File Edit View Favorites Tools Help
BellSouth®
FastAccess®
Internet Service
Easy Login
Home
Diagnostics
Update Modem
Reset Modem
Expert Mode
Easy Login
DSL connection is down. Please check the following:
- Phone line is securely connected to your FastAccess Modem.
- Ready light on front of FastAccess Modem is green and not blinking.
- Filters have been installed on all phone jacks that have telephone devices connected to them
Please try again to connect
If problem persists, please contact the help desk at 1-888-321-2DSL (2375).
User ID
westell
Example: username@bellsouth.net
Password
Provided by your ISP.
Confirm Password
connect

If the ATM connection is down, the following screen will appear. Contact the BellSouth help desk at 1-888-321-2DSL (2375).



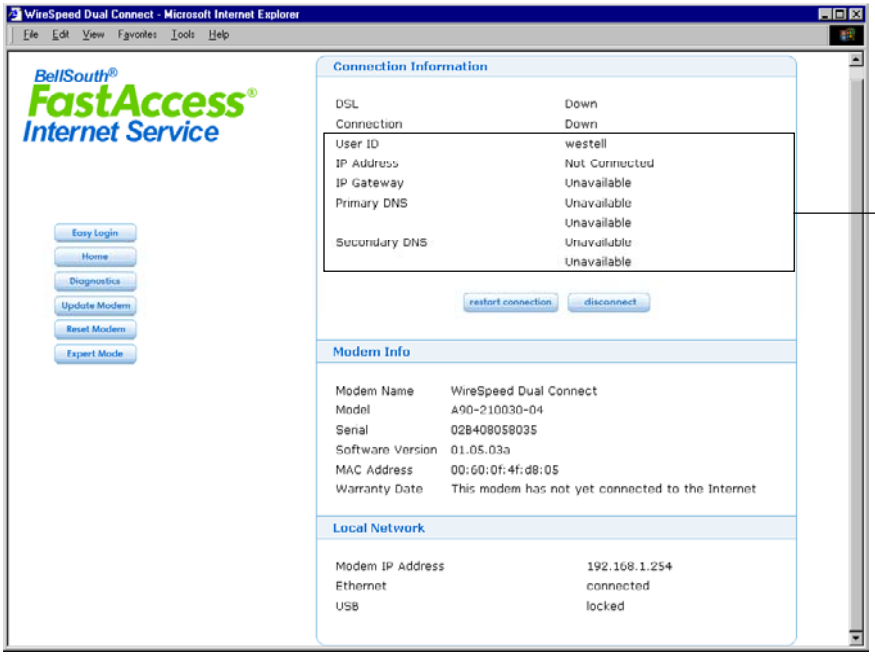
If you cannot connect to your target Internet Service Provider, the following screen will appear. Contact the BellSouth help desk at 1-888-321-2DSL (2375).



7.3 Home

The following screen will appear when you click on the **Home** menu button.

NOTE: User ID, IP Address, IP Gateway, Primary DNS, and Secondary DNS settings will not be displayed if you are in Bridge mode.



The home page displays basic statistics on the Dual Connect Modem, the ADSL connection, and the LAN connection.

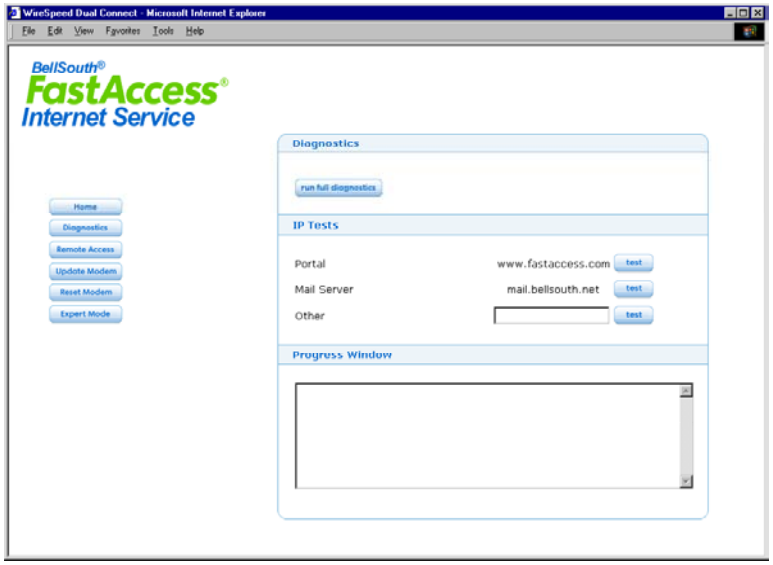
Connection Info.	
DSL	**Up** = DSL connection established **Down** = No DSL connection established
Connection	**Up** = PPPoE session established **Down** = No PPPoE session established
User ID	Displays current User ID (provided by your Internet Service Provider)
IP Address	Displays the IP network address that your modem is on
IP Gateway	Displays the modem IP Gateway address
Primary DNS	Provided by your Service Provider
Secondary DNS	Provided by your Service Provider
Modem Info.	
Modem Name	Name of the Modem
Model	Model Number of the Modem
Serial	Serial Number of the Modem
Software Version	Current Software Version
MAC Address	Modem MAC address
Warranty Date	Warranty Date of the Modem
Local Network	
Modem IP Address	Displays the local IP network address that your modem is on
Ethernet	**connected** = Modem is connected to the PC via Ethernet **not connected** = Modem is not connected **locked** = Modem is connected to the PC via USB
USB	**connected** = Modem is connected to the PC via USB **not connected** = Modem is not connected **locked** = Modem is connected to the PC via Ethernet

The Restart Connection button should be utilized if you become disconnected from the Internet. When this happens, click **Restart Connection**. If your connection is successful, the **Home** page screen will be redisplayed. If your connection is not successful, the **Easy Login** page will appear along with a message that displays details of the failed connection. Refer to section 7.1 Easy Login for more information.

7.4 Diagnostics

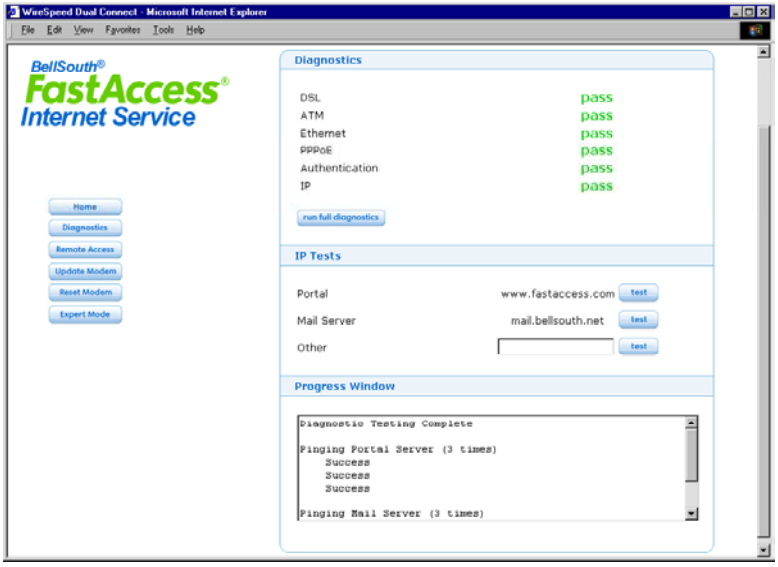
The following screen will appear if you click the **Diagnostics** menu button.

NOTE: The Diagnostics menu options will not be available if you are in Bridge mode.



The **Diagnostics** page allows you to perform simple diagnostics on the Dual Connect Modem. If you want to run the full set of diagnostics on the Dual Connect Modem, click on **run full diagnostics**. The progress window will display "Testing in progress…" until tests are complete.

Once complete, the screen will refresh and the results will be displayed in the Diagnostics fields. If there is a failure, the **Diagnostics** field will also display the details of the failed connection. Refer to section 7.1 Easy Login for more information.



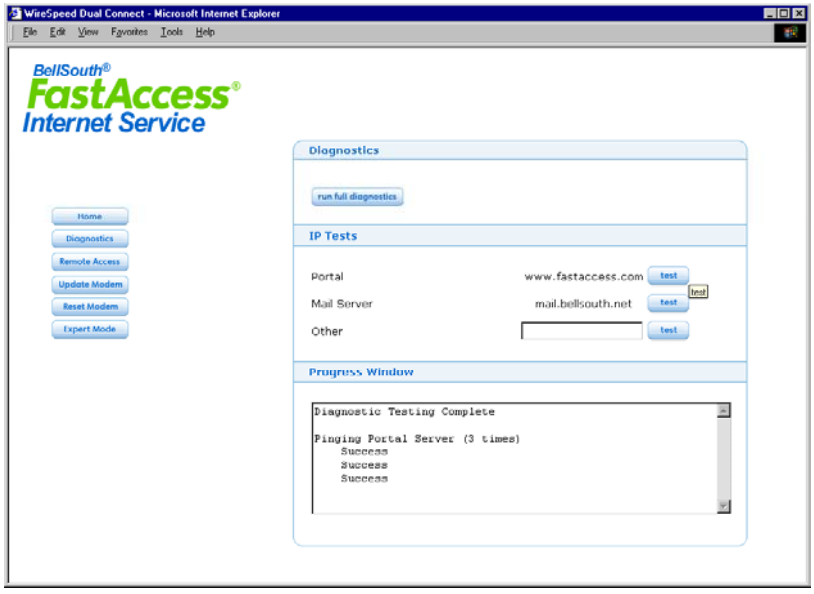
Diagnostic Results	
DSL	**pass** = DSL connection established **fail** = No DSL connection established
ATM	**pass** = ATM cells have been received over the PVC **fail** = No ATM cells have been received over the PVC
Ethernet	**pass** = Ethernet frames have been received **fail** = No Ethernet frames have been received
PPPoE	**pass** = PADO has been received **fail** = No PADO has been received
Authentication	**pass** = Username/Password has been accepted **fail** = Username/Password has not been accepted
IP	**pass** = Ping to www.fastaccess.com was successful **fail** = Ping to www.fastaccess.com was not successful

To perform an IP test, click on the **test** button that is adjacent to the test that you wish to run.

IP Tests	
Portal	Test will ping www.fastaccess.com portal
Mail Server	Test will ping mail.bellsouth.net
Other	Test will allow you to ping a specific ULR or IP address of your choice
Progress Window	
Progress Window	Displays the progress of the test being performed

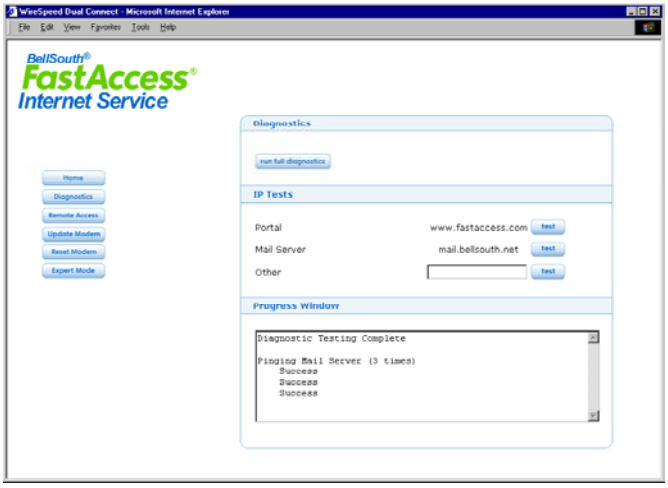
The following screen displays an example **Portal** test. The progress window will display the progress of the test. If there is a failure, the Diagnostics field will display the following message:

> Cannot access the specified URL or Web Address. Please try a different address by using the dialog box marked **Other** and click the **test** button. If the problem persists, go to the **Home** menu button and press the **restart connection** button. After the connection restarts, return to the **Diagnostics** page and try the test again. If the problem persists, contact the BellSouth help desk at 1-888-321-2DSL (2375).



The following screen displays an example **Mail Server** test. The progress window will display the progress of the test. If there is a failure, the Diagnostics field will display the following message:

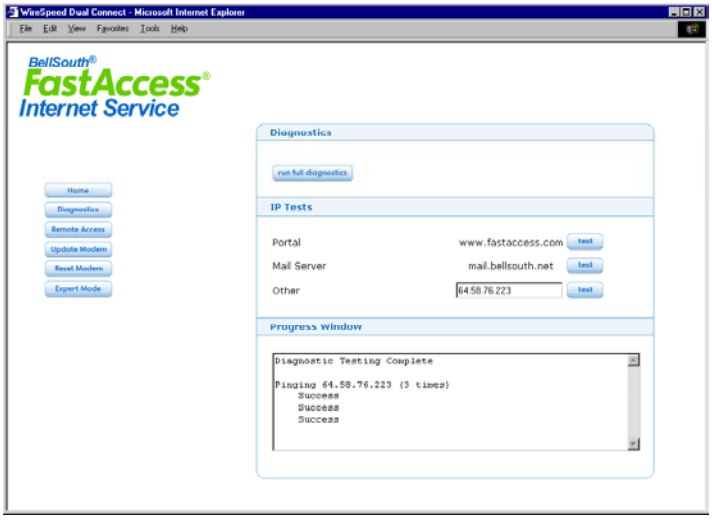
> Cannot access the specified URL or Web Address. Please try a different address by using the dialog box marked **Other** and click the **test** button. If the problem persists, go to the **Home** menu button and press the **restart connection** button. After the connection restarts, return to the **Diagnostics** page and try the test again. If the problem persists, contact the BellSouth help desk at 1-888-321-2DSL (2375).



The following screen displays an example **Other** test. Note: If the **Other** field is blank when the test button is clicked, the progress window will state that there is no IP address or URL to test.

The progress window will display the progress of the test. If there is a failure, the Diagnostics field will display the following message:

> Cannot access the specified URL or Web Address. Please try a different address by using the dialog box marked **Other** and click the **test** button. If the problem persists, go to the **Home** menu button and press the **restart connection** button. After the connection restarts, return to the **Diagnostics** page and try the test again. If the problem persists, contact the BellSouth help desk at 1-888-321-2DSL (2375).

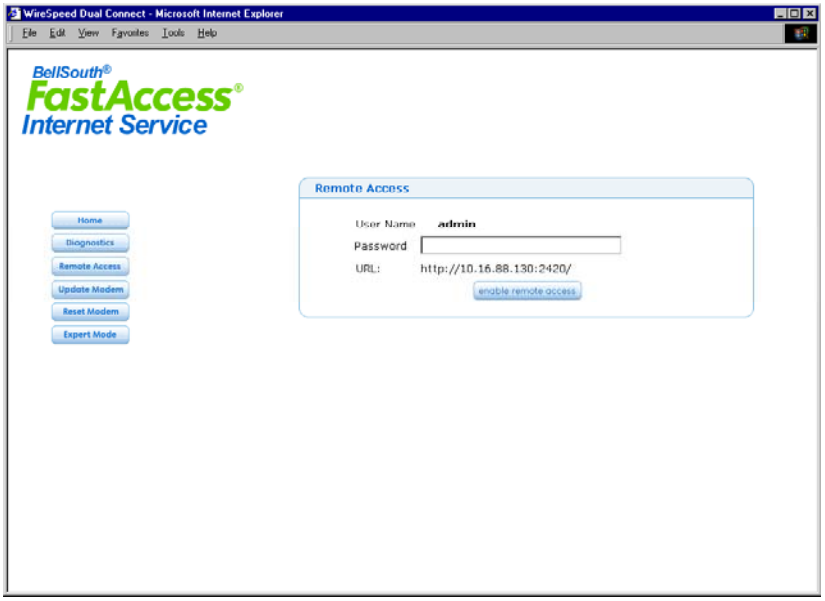


7.5 Remote Access

The following screen will appear if you click on the **Remote Access** menu button. Note: The **Remote Access** menu button will only appear after you have successfully established a connection to the Internet. The **Remote Access** page allows you enter a password and enable remote access.

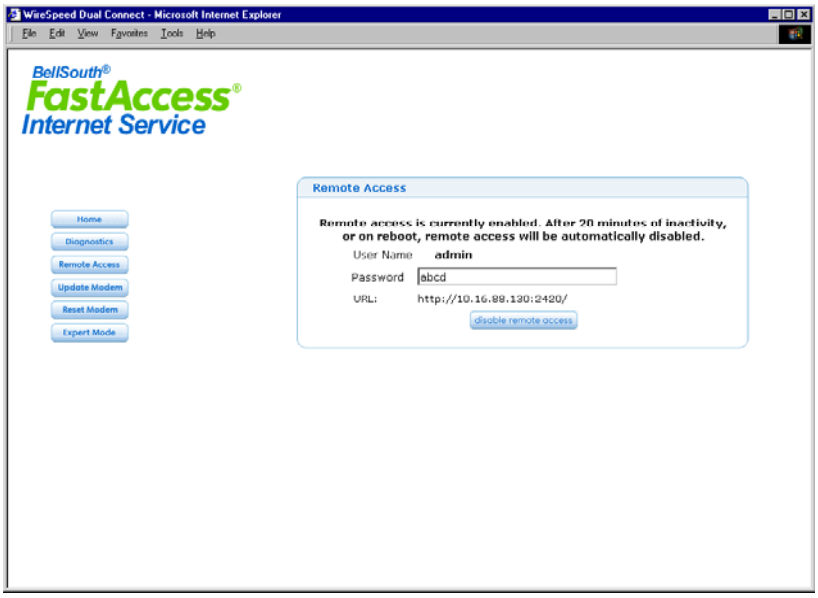
To enable Remote Access, type in a password and click the **enable remote access** button. Note: The password should be at least 4 characters long and should not exceed 32 characters. Do not type a blank space or asterisks in the **Password** field. The password is also case sensitive.

NOTE: The Remote Access menu option will not be available if you are in Bridge mode.



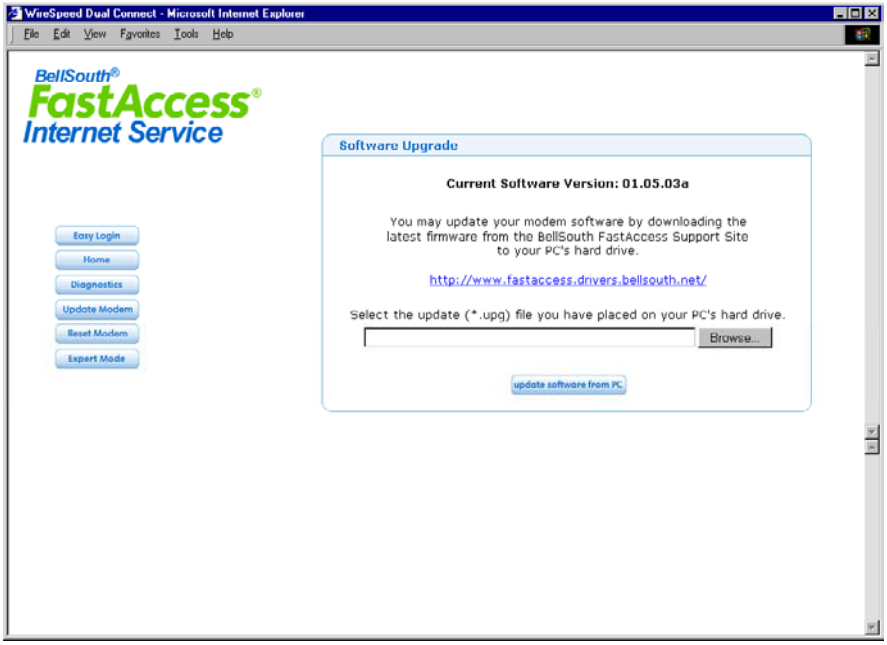
User Name	Displays your current User Name (Static field)
Password	Field for entering your password
URL Address	Displays the IP address of the remote management gateway.

The following screen displays a message that the remote access is currently enabled. After 20 minutes of inactivity, or on reboot, remote access will be automatically disabled. To disable remote access, click on the **disable remote access** button.

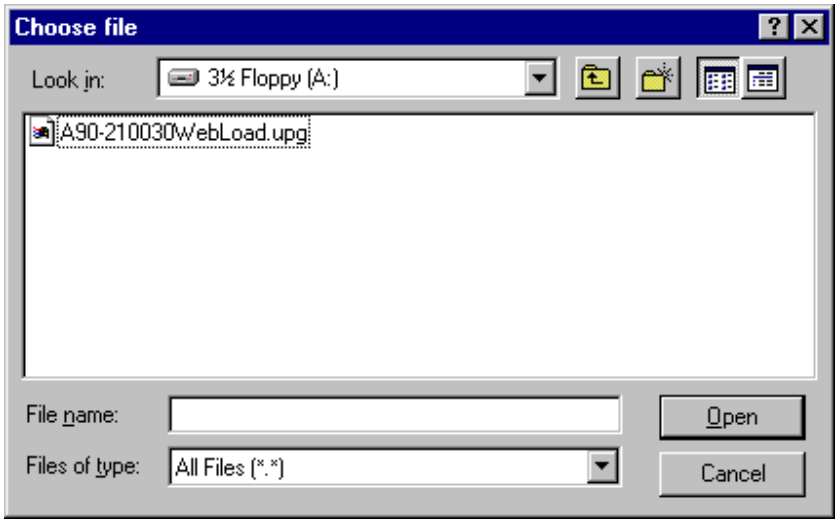


7.6 Update Modem

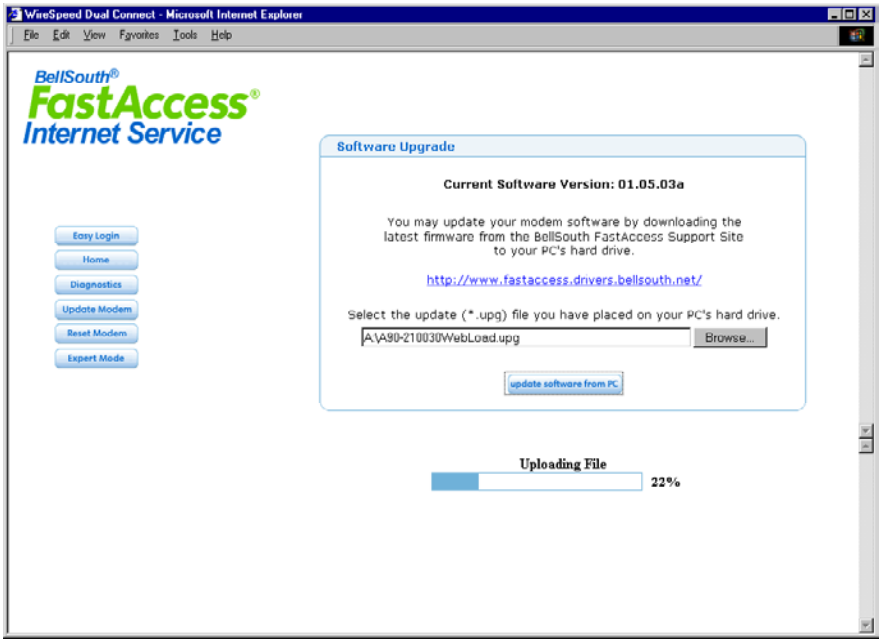
The following screen will appear when you click on the **Update Modem** menu button. The **Update Modem** screen allows you to upgrade the software on your Dual Connect Modem by selecting a file that you have placed on your PC's hard drive.


WireSpeed Dual Connect - Microsoft Internet Explorer
File Edit View Favorites Tools Help
BellSouth®
FastAccess®
Internet Service
Easy Login
Home
Diagnostics
Update Modem
Reset Modem
Expert Mode
Software Upgrade
Current Software Version: 01.05.03a
You may update your modem software by downloading the latest firmware from the BellSouth FastAccess Support Site to your PC's hard drive.
http://www.fastaccess.drivers.bellsouth.net/
Select the update (*.upg) file you have placed on your PC's hard drive.
Browse...
update software from PC

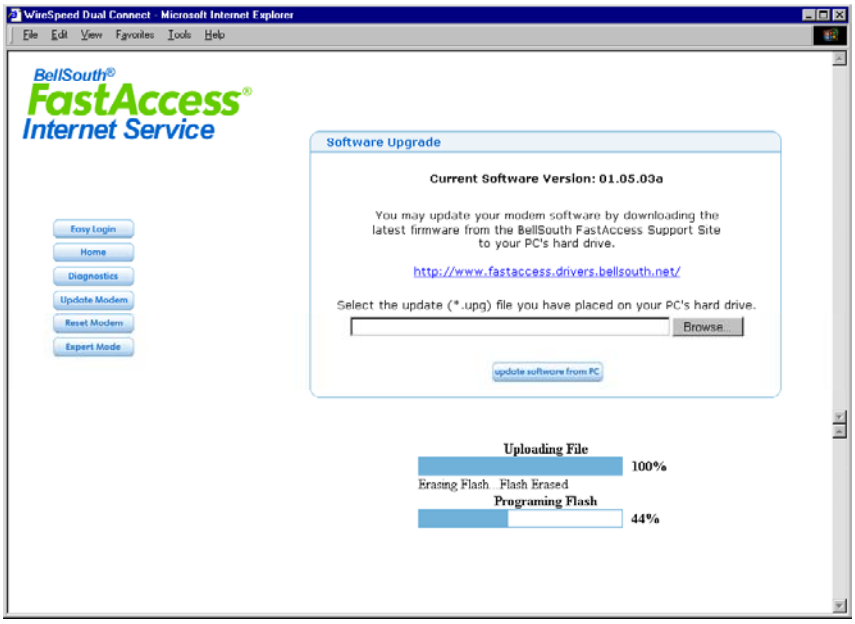
Click on **Browse…** and go to the location where the upgrade file is stored.



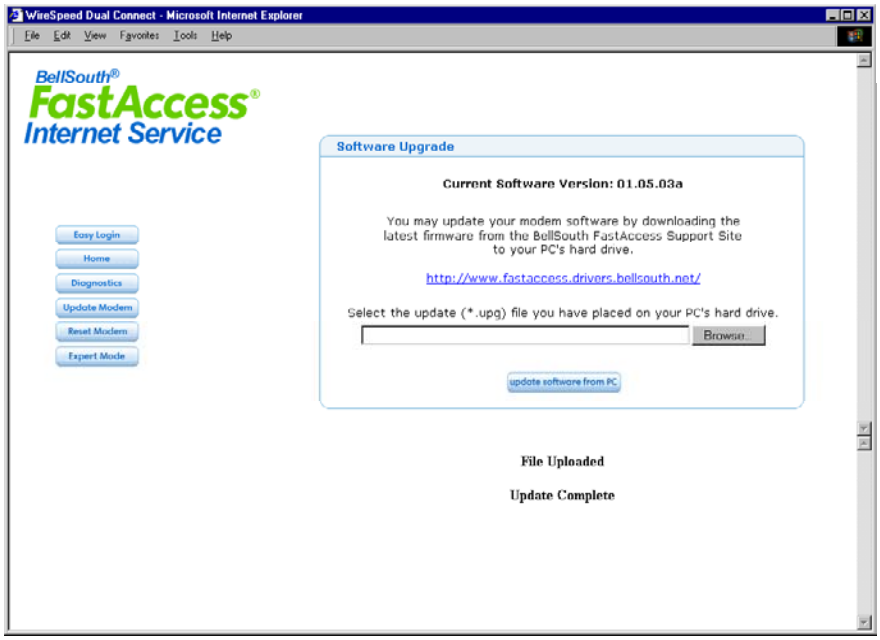
Select the appropriate upgrade file from your browser. The file name will appear in the field labeled **Select the update (*.upg) file that you have placed on your PC's hard drive.** Click on the **update software from PC** button. The following screen shows that the file is being uploaded to your Dual Connect Modem.



The following screen shows that the file upload has completed and that the Programming Flash is uploading.
Note: Programming Flash is a temporary storage area for the uploaded file.



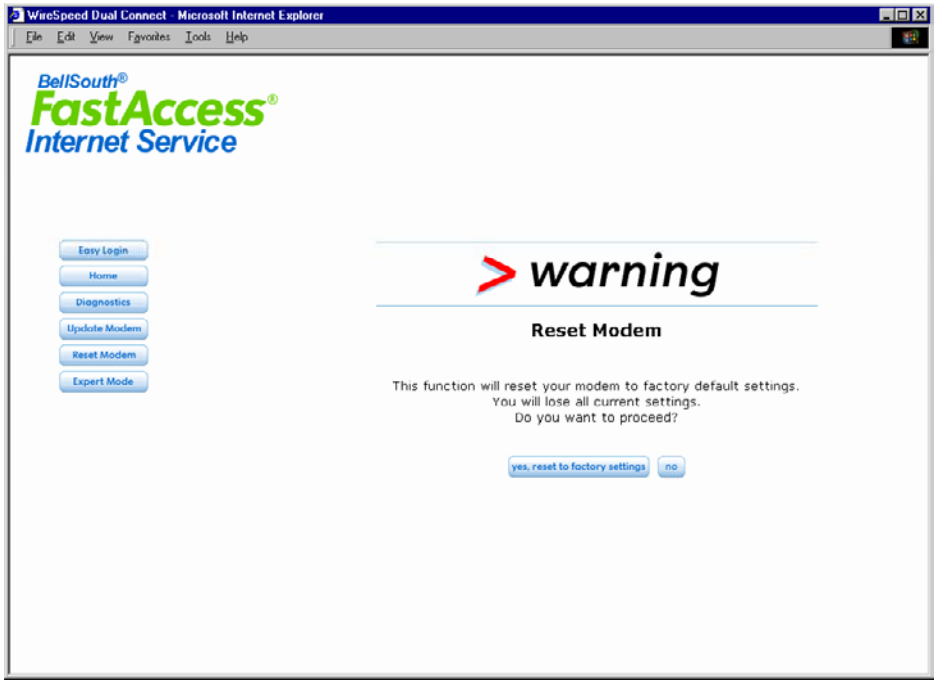
The screen below shows that the upload was successful. Current software version will display the revision number of the current software version.



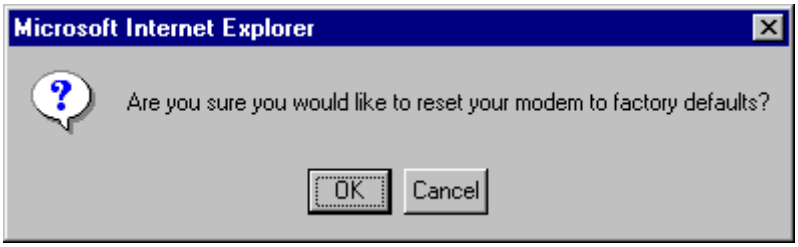
7.7 Reset Modem

The following screen will appear when you click on the **Reset Modem** menu button. The **Reset Modem** screen allows you to reset the modem to factory settings. To reset your modem, click on **yes, reset to factory settings**.

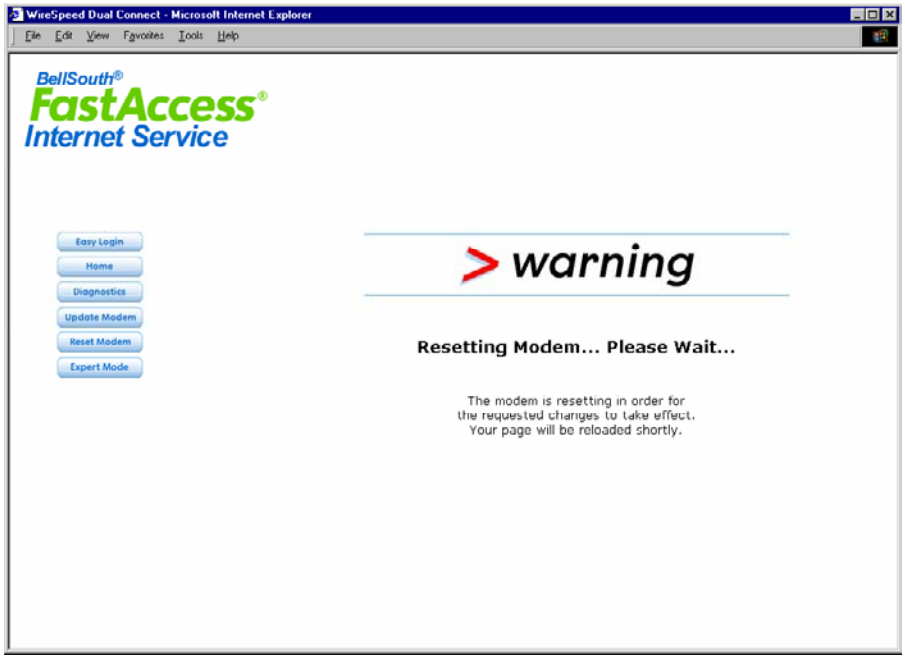
If you do not want to reset your modem, click **no** at the **Reset Modem** screen.



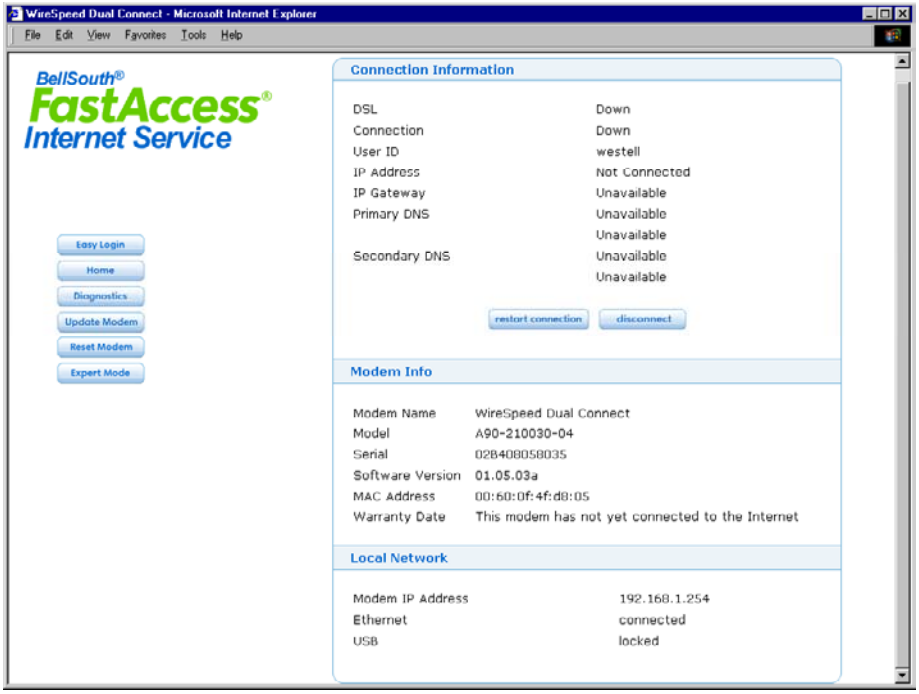
If you clicked on **yes, reset to factory settings** at the **Reset Modem** screen, the following pop-up screen will appear. If you click **OK**, this will confirm that you want to reboot the modem. If you click **Cancel,** the modem will not be reset.



If you clicked on **OK** in the pop-up screen, the following screen will appear. This screen displays the message **Resetting Modem… Please Wait….** The message confirms that the modem is resetting and the requested changes will take effect.



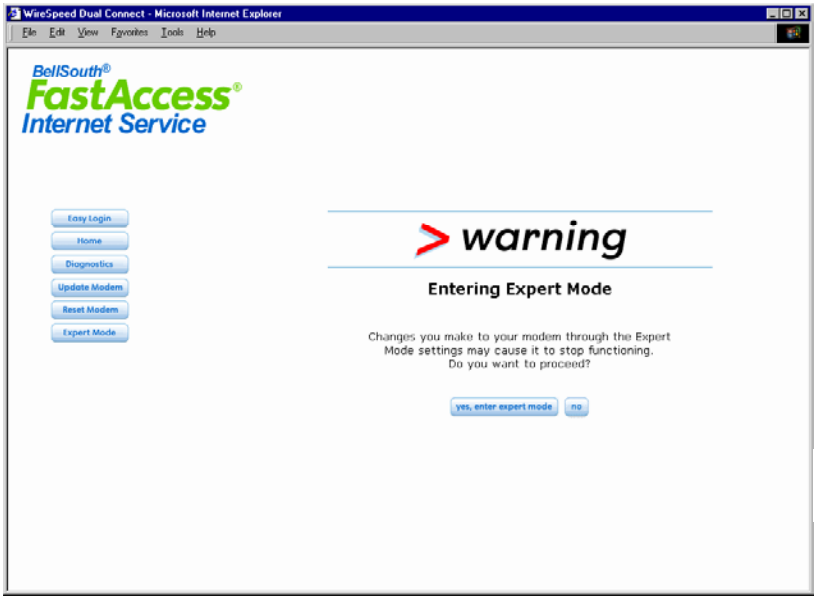
If you clicked on **no** at the **Reset Modem** screen, the following **Home** page will be displayed.



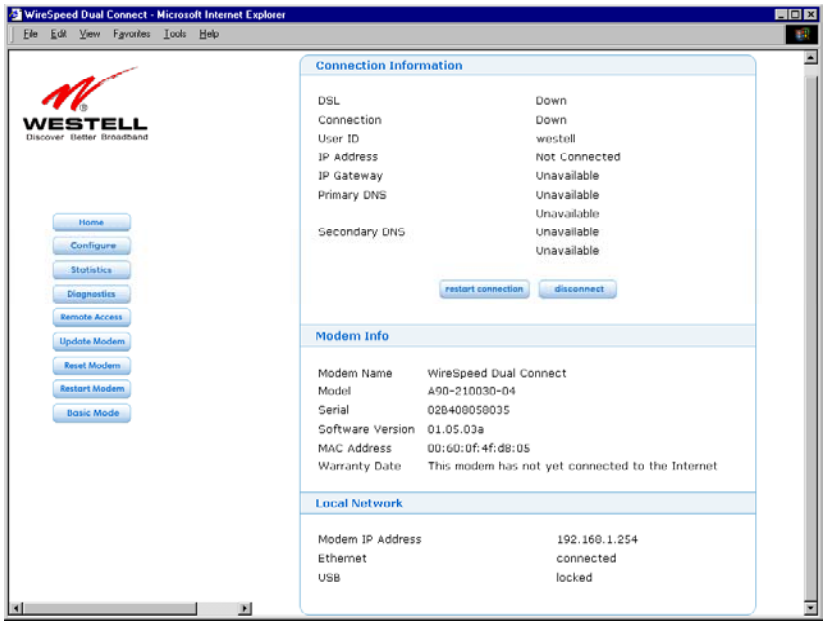
7.8 Expert Mode

The following screen will appear when you click on the **Expert Mode** menu button. The **Entering Expert Mode** screen allows you to access the **Expert Mode** menu options for the Dual Connect Modem. NOTE: Changes you make to your modem through the **Expert Mode** settings may cause it to stop functioning. Do you want to proceed?

To enter **Expert Mode**, click on **yes, enter expert mode**.

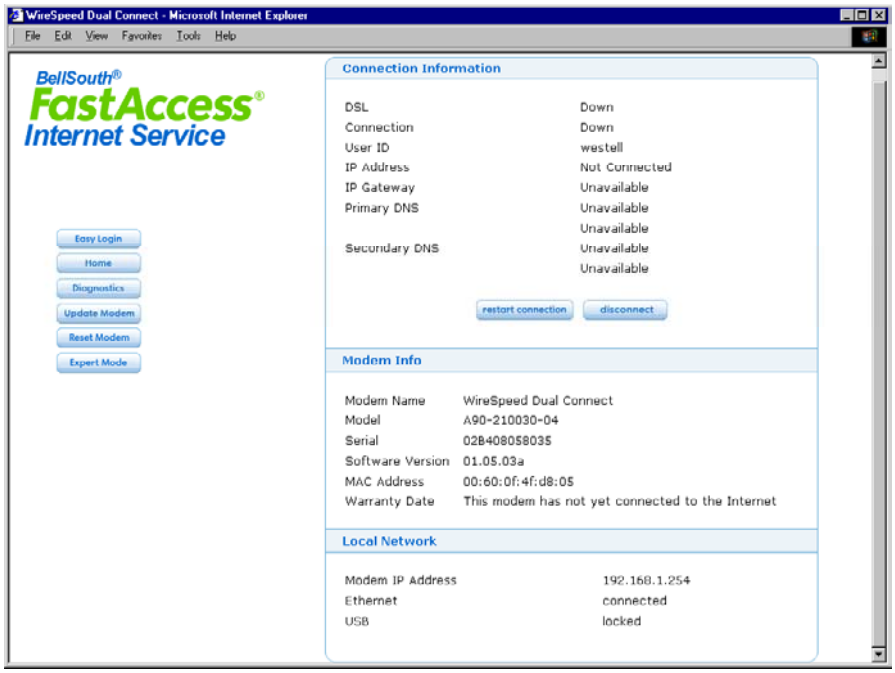


The following **Home** page will appear. This page will allow you to access the **Expert Mode** menu options and make changes to the configurable parameters in your Dual Connect Modem.



Connection Info.	
DSL	**Up** = DSL connection established **Down** = No DSL connection established
Connection	**Up** = PPPoE session established **Down** = No PPPoE session established
User ID	Displays current User ID (provided by your Internet Service Provider)
IP Address	Displays the IP network address that your modem is on
IP Gateway	Displays the modem IP Gateway address
Primary DNS	Provided by your Service Provider
Secondary DNS	Provided by your Service Provider
Modem Info.	
Modem Name	Name of the Modem
Model	Model Number of the Modem
Serial	Serial Number of the Modem
Software Version	Current Software Version
MAC Address	Modem MAC address
Warranty Date	Warranty Date of the Modem
Local Network	
Modem IP Address	Displays the local IP network address that your modem is on
Ethernet	**connected** = Modem is connected to the PC via Ethernet **not connected** = Modem is not connected **locked** = Modem is connected to the PC via USB
USB	**connected** = Modem is connected to the PC via USB **not connected** = Modem is not connected **locked** = Modem is connected to the PC via Ethernet

If you do not want to enter **Expert Mode**, click **no** at the **Enter Expert Mode** screen. The following **Home** page will be displayed.

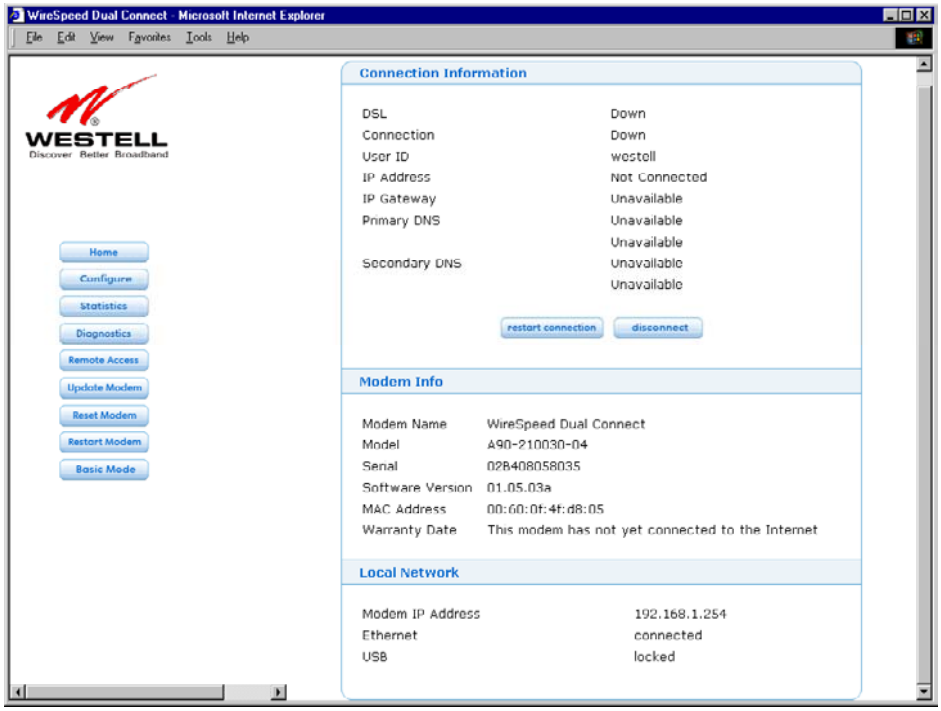


8. EXPERT MODE (Advanced Configuration)

The Advanced Configuration Expert Mode section of your WireSpeed Dual Connect Modem allows you to make changes to configurable parameters in your Modem. The following sections will explain each feature of your Modem and explain how to make changes to your configuration.

8.1 Home

The following screen will appear when you click on the **Home** menu button.



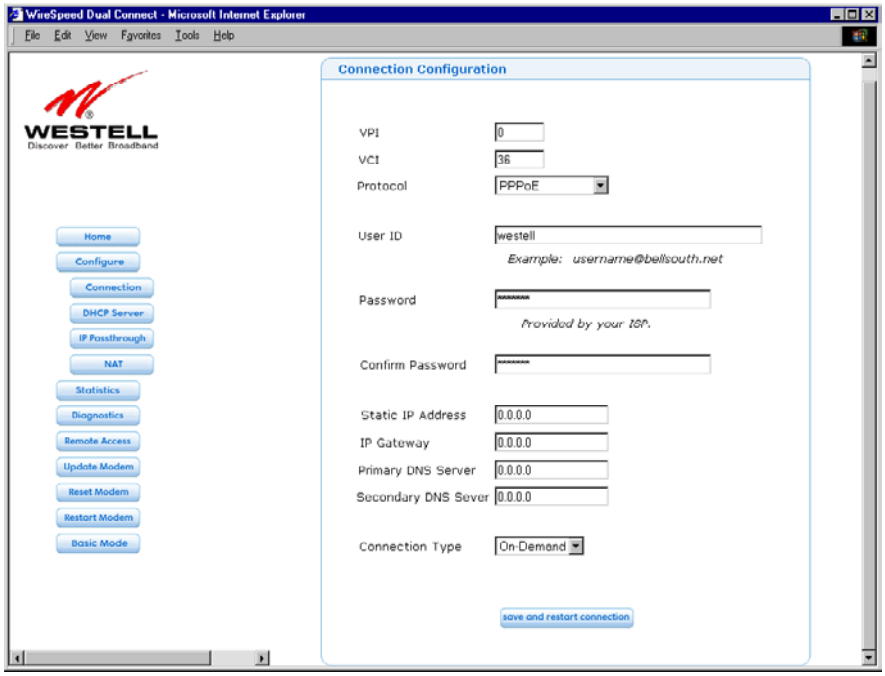
Connection Info.	
DSL	**Up** = DSL connection established **Down** = No DSL connection established
Connection	**Up** = PPPoE session established **Down** = No PPPoE session established
User ID	Displays current User ID (provided by your Internet Service Provider)
IP Address	Displays the IP network address that your modem is on
IP Gateway	Displays the modem IP Gateway address
Primary DNS	Provided by your Service Provider
Secondary DNS	Provided by your Service Provider
Modem Info.	
Modem Name	Name of the Modem
Model	Model Number of the Modem
Serial	Serial Number of the Modem
Software Version	Current Software Version
MAC Address	Modem MAC address

Warranty Date	Warranty Date of the Modem
Local Network	
Modem IP Address	Displays the local IP network address that your modem is on
Ethernet	**connected** = Modem is connected to the PC via Ethernet **not connected** = Modem is not connected **locked** = Modem is connected to the PC via USB
USB	**connected** = Modem is connected to the PC via USB **not connected** = Modem is not connected **locked** = Modem is connected to the PC via Ethernet

8.2 Configure

Connection Configuration

The following fields will be displayed if you select the **Configure** menu on the home page and select **Connection**. This screen allows you to change your connection settings. To save your parameters, click on the **save and restart connection** button.

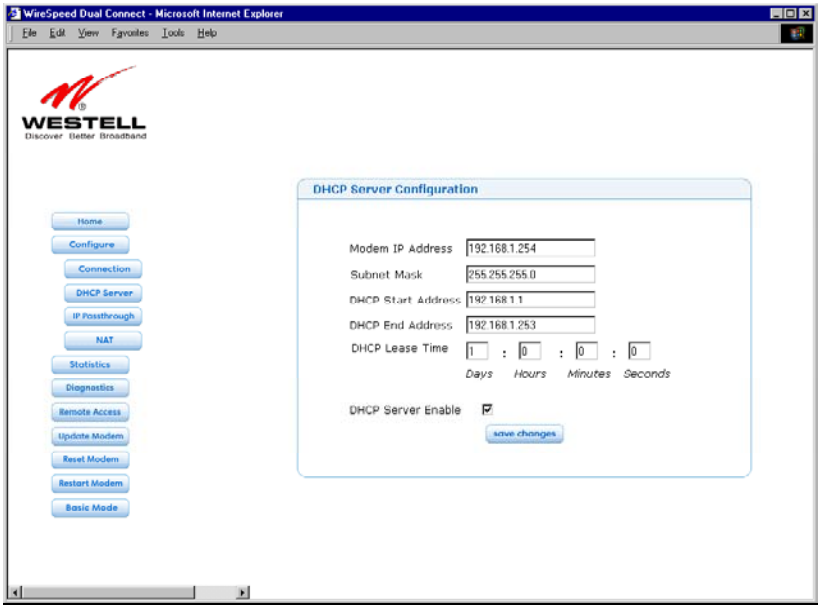


VPI	Displays the VPI (Virtual Path Indicator) value for a particular VC, which is defined by your Internet Service Provider.
VCI	Displays the VCI (Virtual Channel Indicator) value for a particular VC, which is defined by your Internet Service Provider.
Protocol	Displays the Protocol for each VC, which is specified by our Internet Service Provider. PPPoE=Point to Point Protocol over Ethernet Bridge=Bridge Protocol
User ID	The User ID is provided by your Internet service provider. An example of the user name is Username@westell.com.

Password	The Password is provided by your Internet service provider.
Confirm Password	The identical value that you typed in the **Password** field.
Static IP Address	IP address assigned by your Service Provider.
IP Gateway	Displays the modem IP Gateway address
Primary DNS	Provided by your Service Provider
Secondary DNS	Provided by your Service Provider
Connection Type	Default = On-Demand **Possible responses are:** **On-Demand** = Selecting this feature allows you to manually establish the PPP session through the "homepage" connection button. **Always-on** = Selecting this feature allows the Dual Connect Modem to establish an "always-on" PPP session if it goes down.

DHCP Server Configuration

The following fields will be displayed if you select the **Configure** menu on the home page and select **DHCP Server**. The **DHCP Server Configuration** screen allows you to configure the DHCP server IP address range, subnet mask, and modem IP address. To save your parameters, click on the **save changes** button.

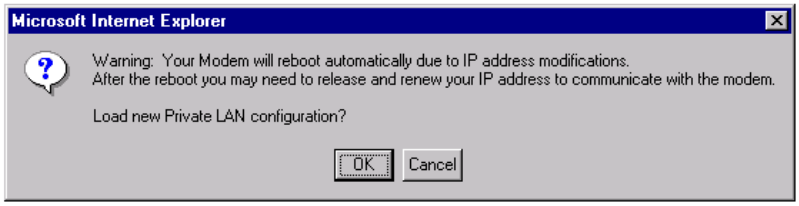


Modem IP Address	Displays the Modem's IP address
Subnet Mask	Displays the Subnet Mask, which determines what portion of an IP address is controlled by the network, and which portion is controlled by the host.

DHCP Start Address	Displays the starting DHCP Address. The Start Address must be within the IP address and lower than the End Address. Dynamic Host Configuration Protocol automatically assigns IP addresses to devices added to your LAN (Local Area Network).
DHCP End Address	Displays the ending DHCP Address. The End Address must be within the IP address and higher than the Start Address. Dynamic Host Configuration Protocol automatically assigns IP addresses to devices added to your LAN (Local Area Network).
DHCP Lease Time	Default = 01:00:00:00 (dd:hh:mm:ss)* Displays the DHCP lease time. NOTE: This value must be greater 10 seconds. *(dd = days, hh = hours, mm = minutes, ss = seconds) * Seconds must be between 0 and 59. Minutes must be between 0 and 59. Hours must be between 0 and 23.
DHCP Server Enable	Factory Default = ENABLED Allows you to enable the DHCP server When DISABLED, this feature will transfer this functionality to your computer.

If you click on the **save changes** button in the **DHCP Server Configuration** screen, the following pop-up screen will be displayed. Click on **OK** in the **Load new Private LAN configuration?** screen. This will save your DHCP settings.

If you click **Cancel** in the **Load new Private LAN configuration?** screen, your new settings will not take effect. If you change your modem IP Address, the following screen will appear:

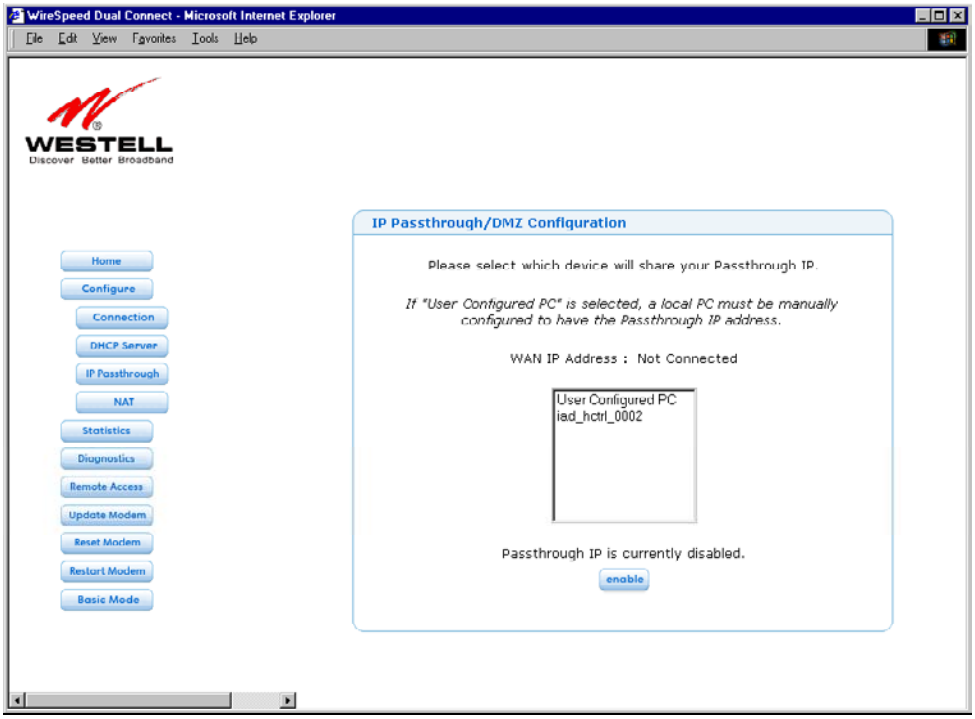

Microsoft Internet Explorer
Warning: Your Modem will reboot automatically due to IP address modifications.
After the reboot you may need to release and renew your IP address to communicate with the modem.
Load new Private LAN configuration?
OK
Cancel

Your modem will reboot automatically due to IP address modifications. After the reboot, you may need to release and renew your IP address to communicate with the modem.

IP Passthrough/DMZ Configuration

The following fields will be displayed if you select the **Configure** menu at the home page and select **IP Passthrough**. The **IP Passthrough/DMZ Configuration** screen allows you to select the device on your LAN that will share your Passthrough IP.

NOTE: If "User Configured PC" is selected, a local PC must be manually configured to have the Passthrough IP address.

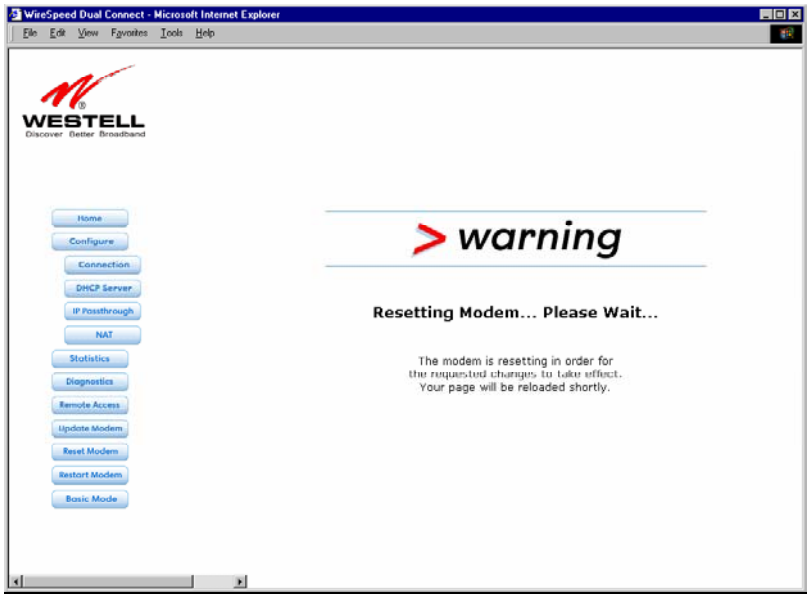


To enable IP Passthrough, select a device from the devices shown and click on **enable.** The following pop-up screen will appear.

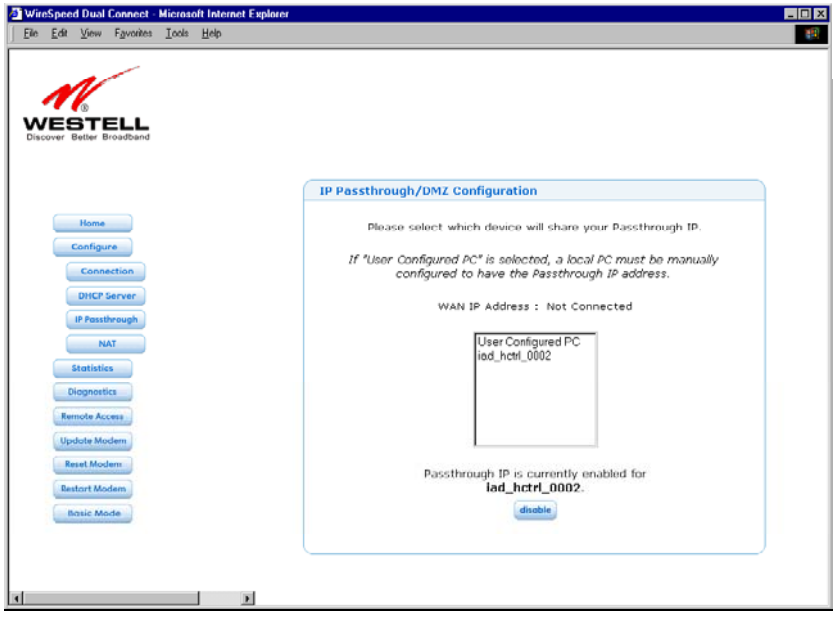
Select **OK** to enable, **Cancel** to abort. If you clicked **OK** in the pop-up screen, the following pop-up screen will appear.

Microsoft Internet Explorer
The modem must be reset in order for the new configuration to take affect.
Do you wish to reset now?
OK
Cancel

The modem must be reset in order for the new configuration to take effect. Click **OK** to reset now, **Cancel** to abort. While the modem is resetting, you will see the following warning screen.



Once complete, the **IP Passthrough/DMZ Configuration** screen will be updated to show that Passthrough IP is currently enabled for the selected device.



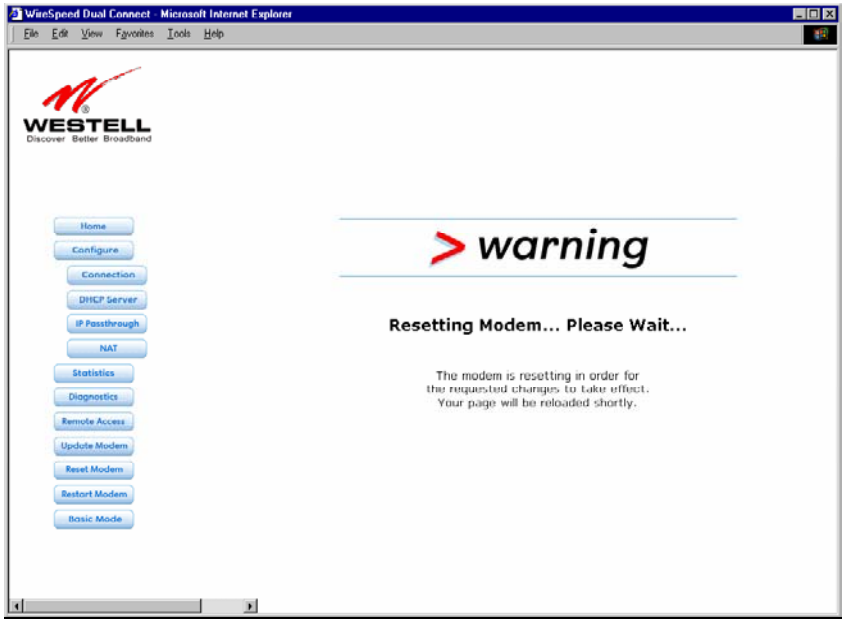
To disable IP Passthrough, click on the **disable** button. The following pop-up screen will appear.

Select **OK** to disable, **Cancel** to abort. If you clicked **OK** in the **Disable IP Passthrough?** pop-up screen, the following pop-up screen will appear.

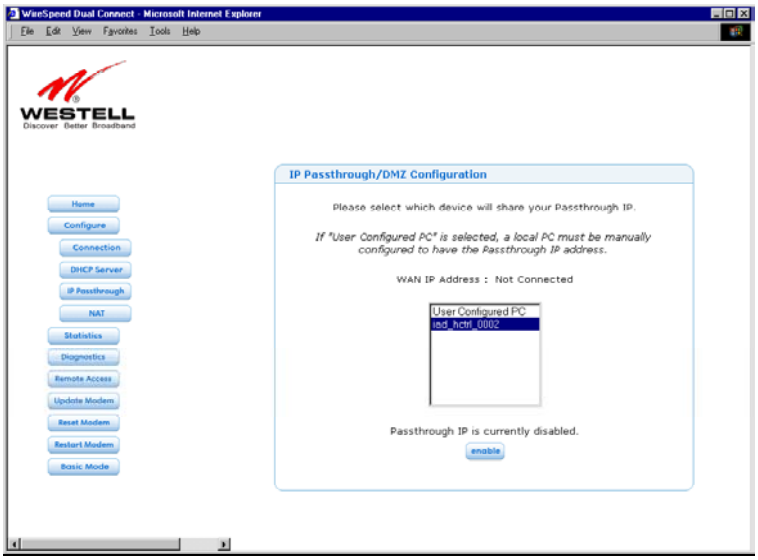
Microsoft Internet Explorer
The modem must be reset in order for the new configuration to take affect.
Do you wish to reset now?
OK
Cancel

The modem must be reset in order for the new configuration to take effect. Click **OK** to reset now, **Cancel** to abort.

While the modem is resetting, you will see the following warning screen.



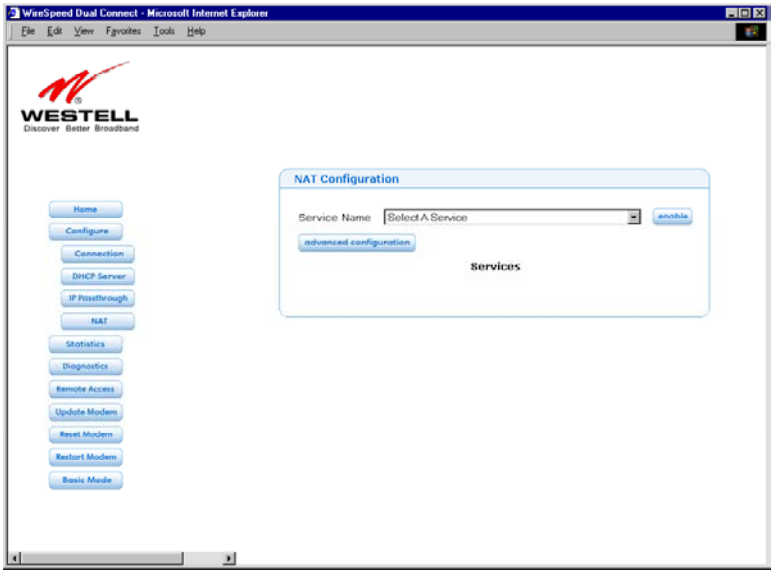
Once complete, the **IP Passthrough/DMZ Configuration** screen will be updated to show that Passthrough IP is currently disabled.



NAT Configuration

The following fields will be displayed if you select **NAT** from the homepage menu.

Westell has developed an extensive list of NAT services and you may select any service from this list. By selecting your specific NAT service and setting up a NAT profile, you will ensure that the appropriate ports on your Modem are open and that the required application traffic can pass through your LAN. For a list of supported services, please go to section 8.10 NAT Services.

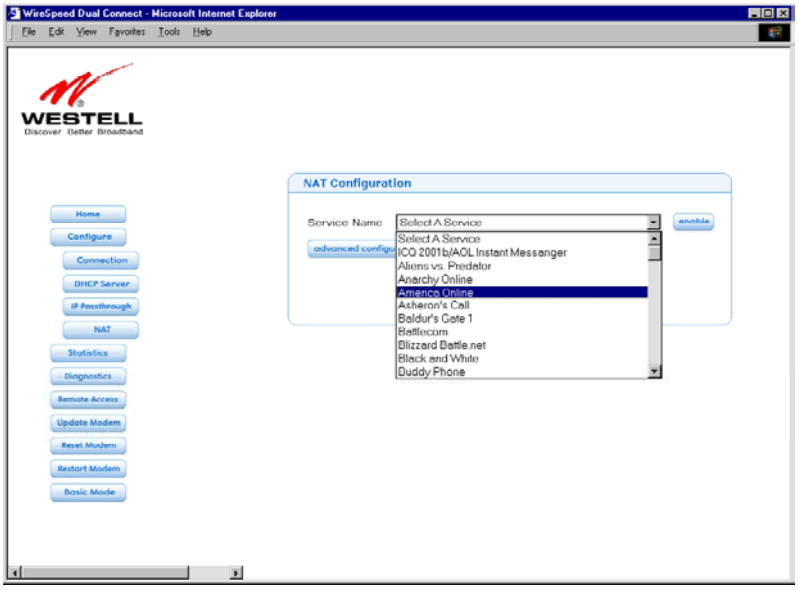


Service Name	Drop down selection menu of NAT (Network Address Translation) service that you can select to configure your Modem.

Westell has developed an extensive list of NAT services and you may select any service from this list. By selecting your specific NAT service and setting up a NAT profile, you will ensure that the appropriate ports on your Modem

are open and that the required application traffic can pass through your LAN. For a list of supported services, please go to section 8.10 NAT Services.

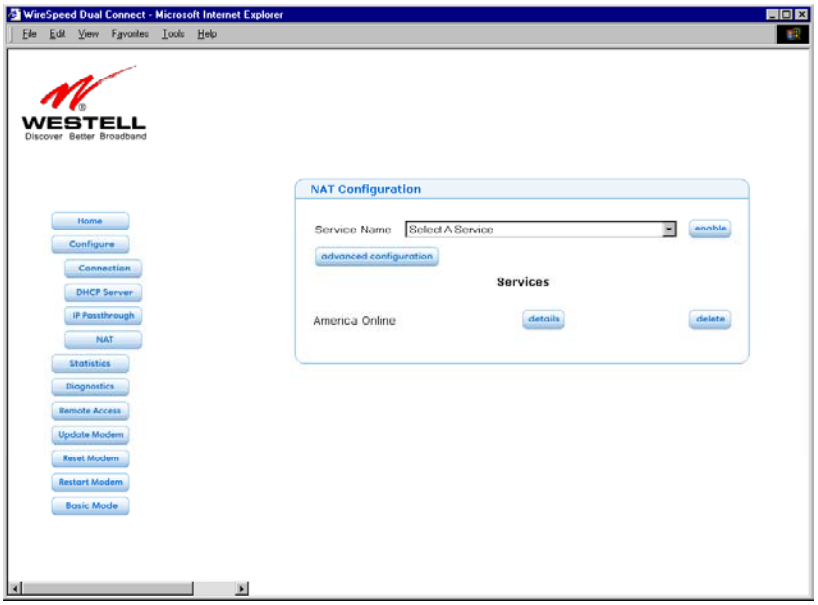
From the selection provided, click on the service name of your choice. Next, click **enable** in the **NAT Configuration** screen.



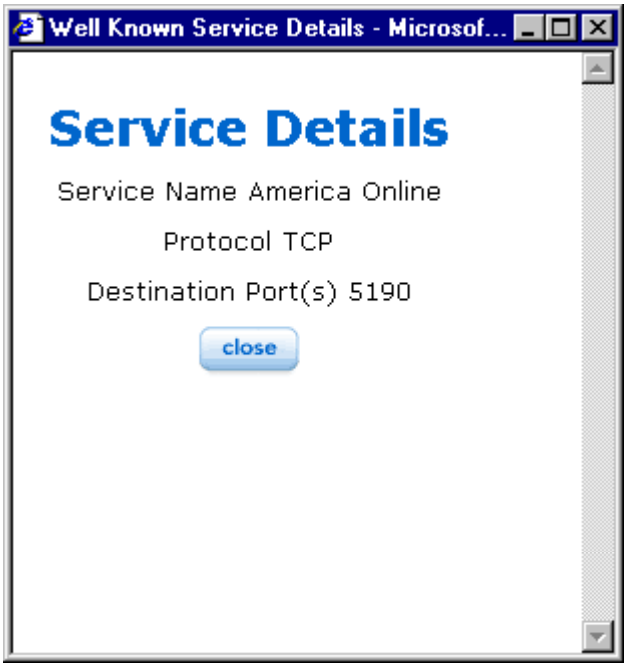
Click **OK** in the **Load new NAT Configuration?** screen. This will load the new NAT Configuration and the settings will automatically be saved.

Note: You can attach multiple NAT services to your profile. However, for each NAT service that you attach to your profile, you must first select the new NAT service. Next, load the new NAT Configuration, as explained above.

Once you have selected a NAT service and you have saved it to your NAT profile, the screen below will be displayed. It shows which NAT service is active for the selected profile.



If you select **details** under **Services**, the screen below displays the details of the selected NAT service. If you select **delete**, you will remove that NAT service profile from your Modem.

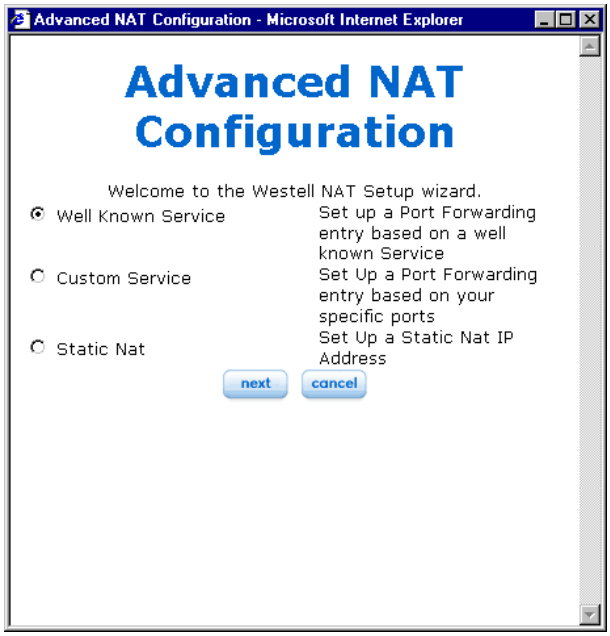


Advanced NAT Configuration

To setup additional NAT options, click on **advanced configuration** at the **NAT** screen.

When you click on **advanced configuration**, a Wizard will appear. The Wizard will guide you through the steps of creating an advanced NAT service entry. You can setup port forwarding and trigger port options as well as enable Static NAT through the advanced configuration wizard.

Note: Westell strongly recommends that you do not change any values in this section. If you experience any problems, please reset your Modem via the external hardware reset switch or the procedure defined under the Maintenance menu.

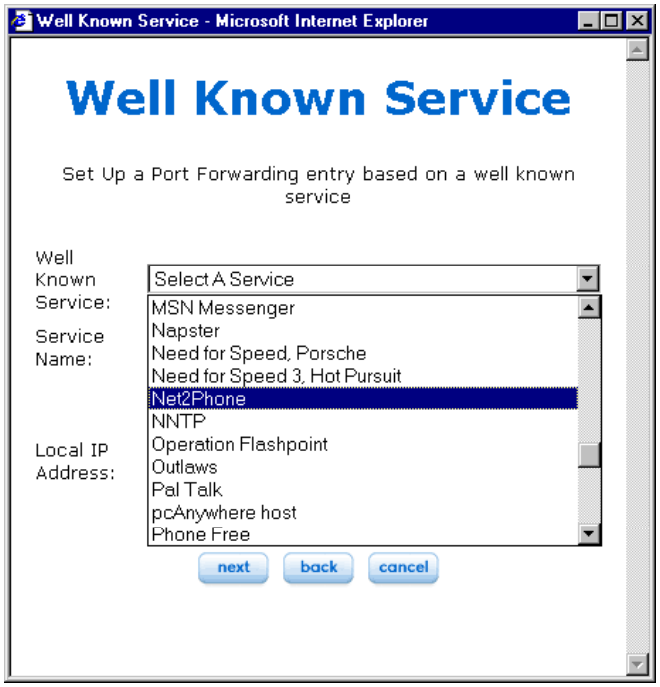

Advanced NAT Configuration - Microsoft Internet Explorer
Advanced NAT Configuration
Welcome to the Westell NAT Setup wizard.
Well Known Service
Set up a Port Forwarding entry based on a well known Service
Custom Service
Set Up a Port Forwarding entry based on your specific ports
Static Nat
Set Up a Static Nat IP Address
next
cancel

Well Known Service	This option allows you to Configure Port Forwarding parameters based on well-known services.
Custom Service	This option allows you to customize your Port Forwarding based on your specific port requirements.
Static NAT	This option allows you to set up a Static NAT IP Address.

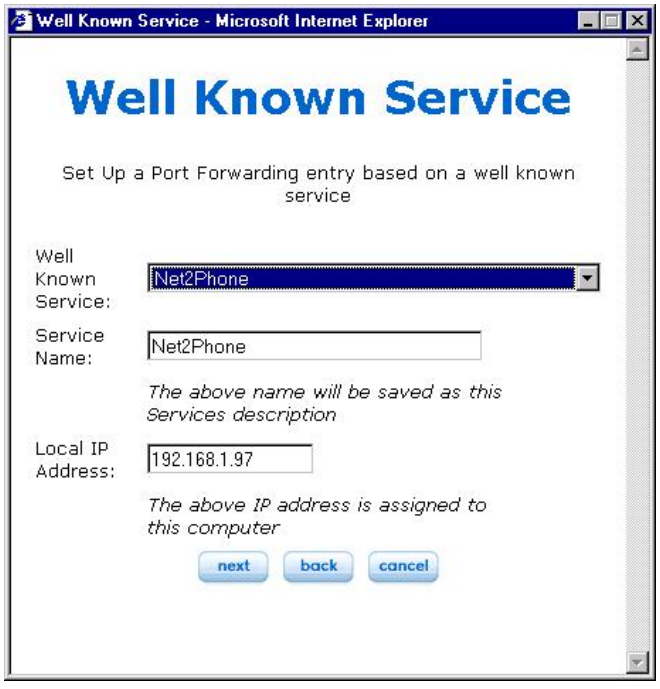
Well Known Service

If you select **Well Known Service** from the **Advanced NAT Configuration** screen, the following steps will walk you through the process of configuring your Modem to work with the selected NAT service.

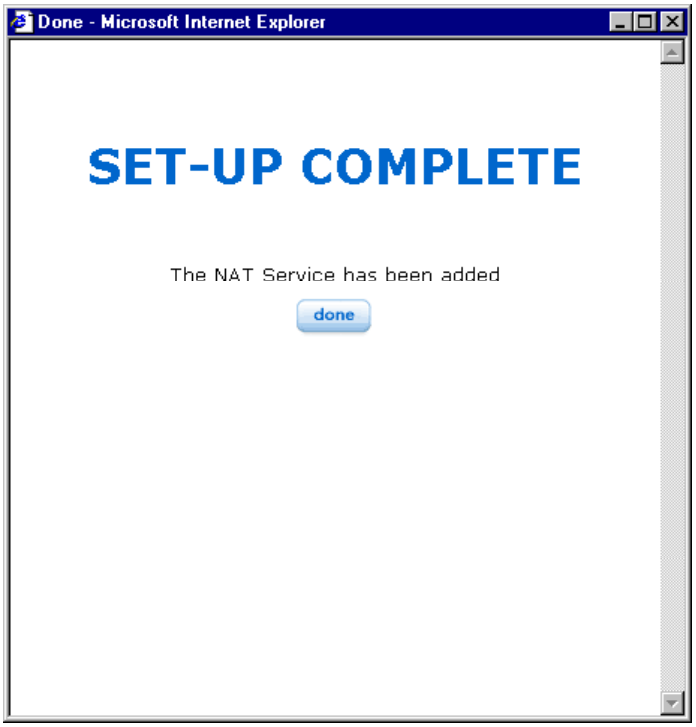
Select a service from the pull down menu. Click **next**.



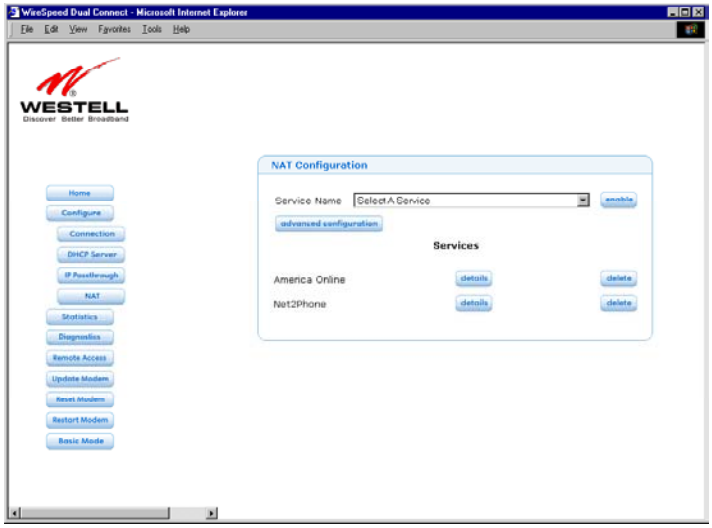
The selected service will appear in the **Well Know Service** field and in the **Service Name** field.



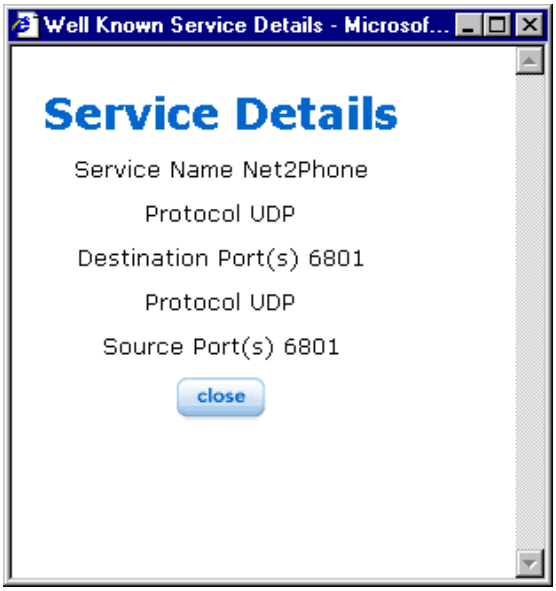
When the selected NAT service has been added, you will be notified. Click **done**.



The screen below displays the added service.



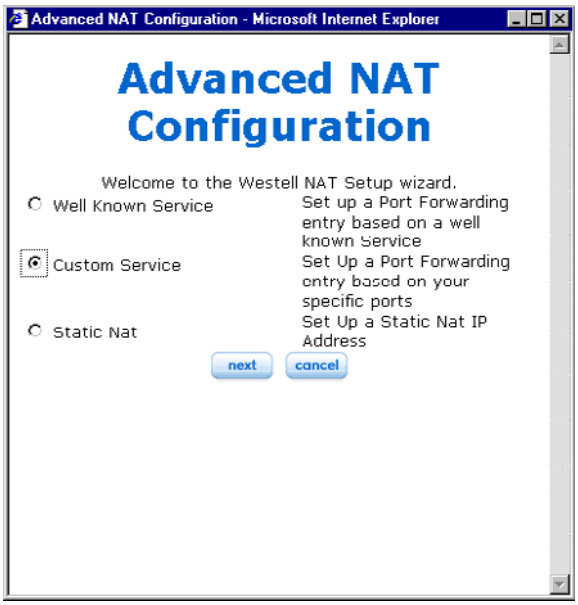
If you clicked on **details** under **Services**, the following fields will be displayed.



Service Name	The NAT service you selected
Protocol	The type of Protocol used to run this NAT service
Destination Port(s)	Traffic going from the modem to these ports
Protocol	The type of Protocol used to run this NAT service
Source Port(s)	Traffic going from the modem from these ports

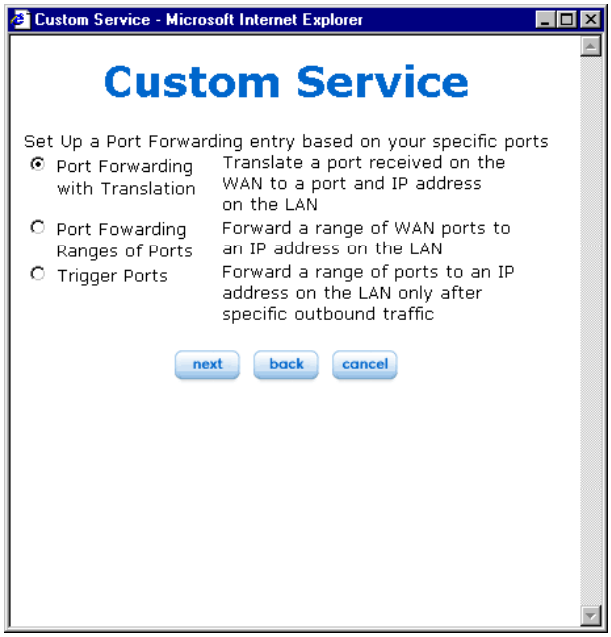
Custom Service

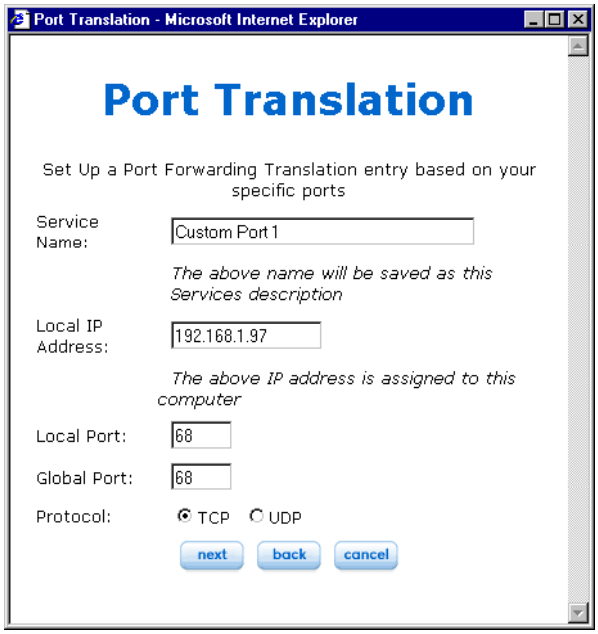
If you select **Custom Service** from the **Advanced NAT Configuration** screen, the following steps will walk you through the process of configuring your Modem to work with the special NAT services. Click **next** to continue.


Advanced NAT Configuration - Microsoft Internet Explorer
Advanced NAT Configuration
Welcome to the Westell NAT Setup wizard.
Well Known Service
Set up a Port Forwarding entry based on a well known Service
Custom Service
Set Up a Port Forwarding entry based on your specific ports
Static Nat
Set Up a Static Nat IP Address
next
cancel

Port Forwarding with Translation

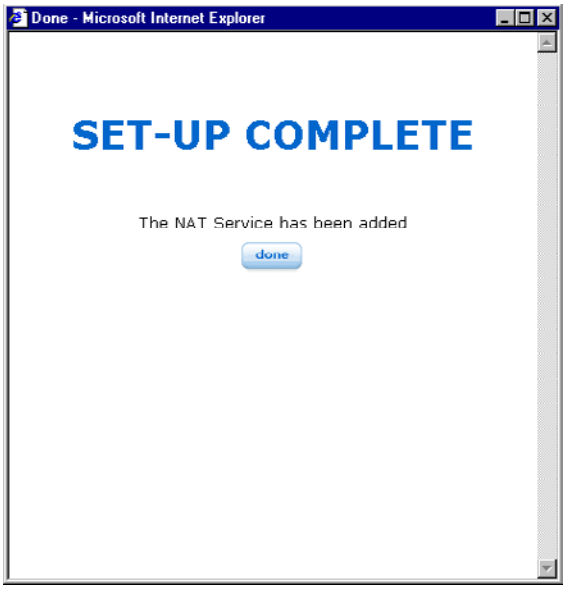
If you select **Port Forwarding with Translation** from the **Custom Service** screen, the follow fields from the **Port Translation** screen will be displayed. Click **next** to continue.


Custom Service - Microsoft Internet Explorer
Custom Service
Set Up a Port Forwarding entry based on your specific ports
Port Forwarding with Translation
Translate a port received on the WAN to a port and IP address on the LAN
Port Fowarding Ranges of Ports
Forward a range of WAN ports to an IP address on the LAN
Trigger Ports
Forward a range of ports to an IP address on the LAN only after specific outbound traffic
next
back
cancel

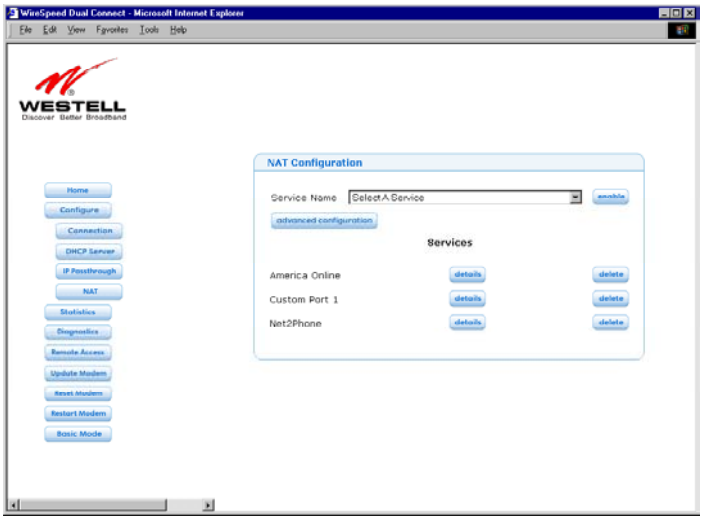


Service Name	The NAT service you selected.
Local IP Address	If a static IP address has been assigned, it will be displayed here.
Local Port	The port that is running this NAT service.
Global Port	The port on the WAN that is used to run this NAT service.
Protocol	The type of Protocol that is used to run this NAT service

The screen below displays a message that the NAT service has been added. Click **done**.

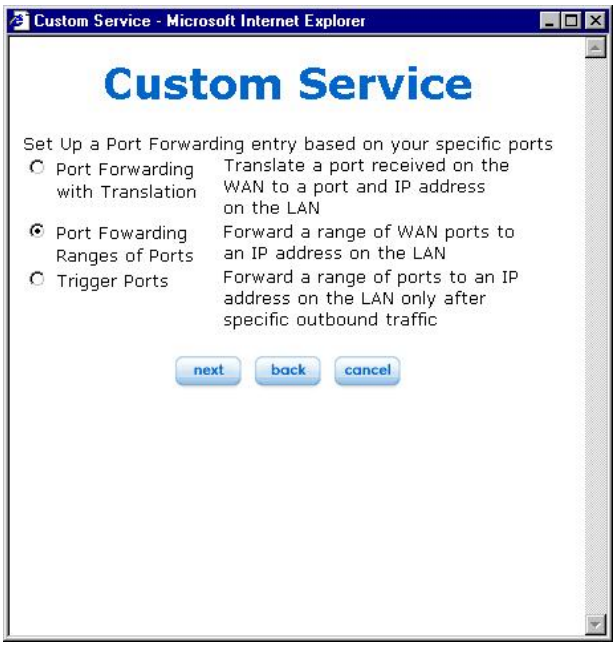


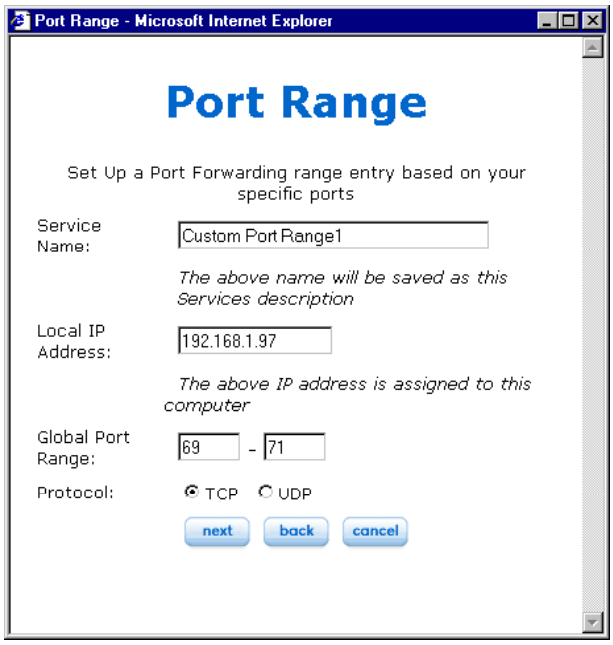
Your custom service will displayed under **Services** on the NAT screen



Port Forwarding Ranges of Ports

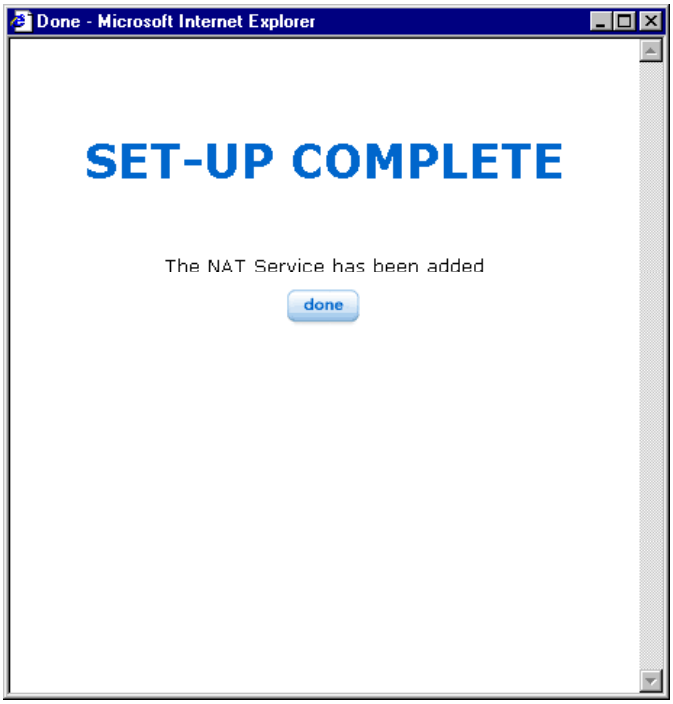
If you select **Port Forwarding Ranges of Ports** from the **Custom Service** screen, the following fields from the **Port Range** screen will be displayed. Click **next** to continue.


Custom Service - Microsoft Internet Explorer
Custom Service
Set Up a Port Forwarding entry based on your specific ports
Port Forwarding with Translation
Translate a port received on the WAN to a port and IP address on the LAN
Port Fowarding Ranges of Ports
Forward a range of WAN ports to an IP address on the LAN
Trigger Ports
Forward a range of ports to an IP address on the LAN only after specific outbound traffic
next
back
cancel

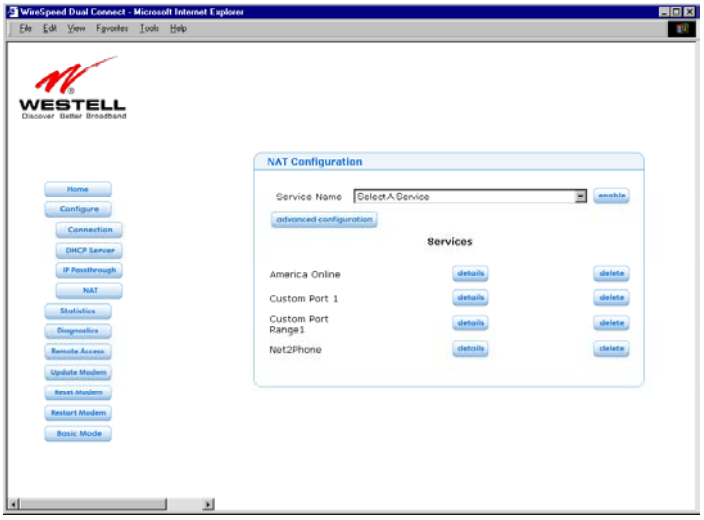


Service Name	The NAT service you selected.
Local IP Address	If a static IP address has been assigned, it will be displayed here.
Global Port Range	The port range that is provided by the service that you are customizing.
Protocol	The type of Protocol that is used to run this NAT service.

The screen below displays a message that the NAT service has been added. Click **done**.

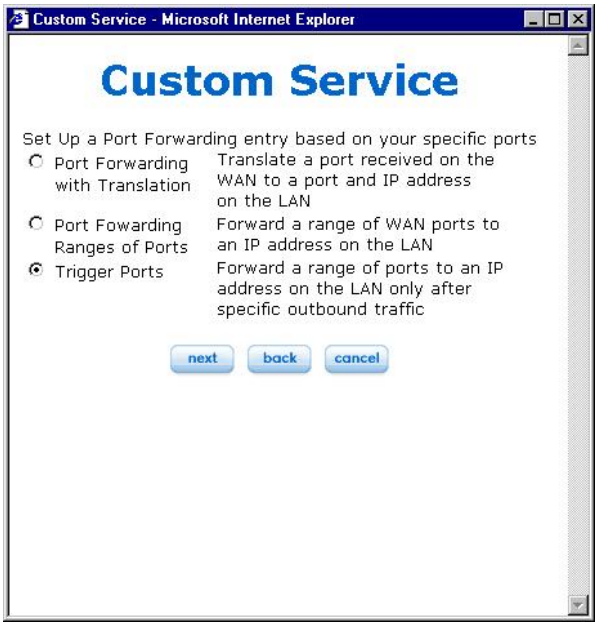


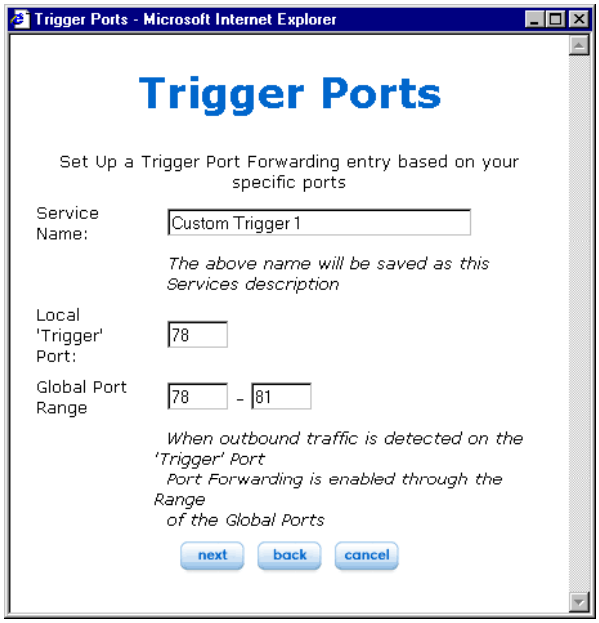
Your custom service will be displayed under **Services** on the NAT screen.



Port Forwarding Trigger Ports

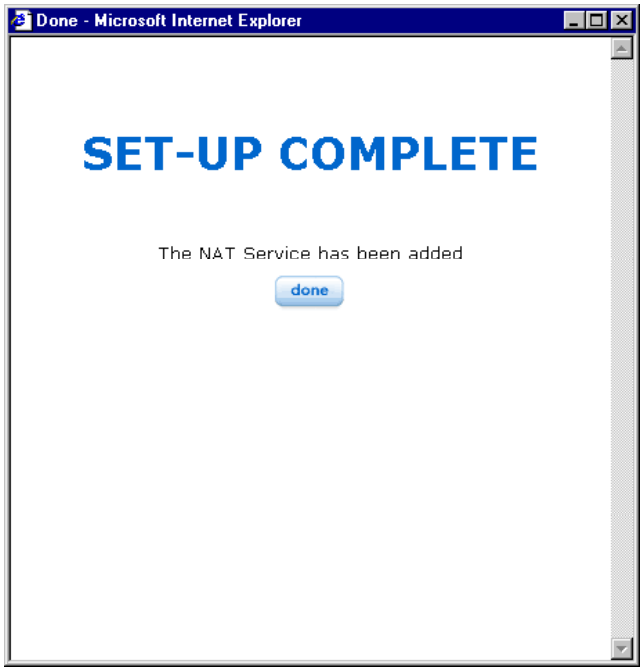
If you select **Trigger Ports** from the **Custom Service** screen, the following fields from the **Trigger Ports** screen will be displayed. Click **next** to continue.


Custom Service - Microsoft Internet Explorer
Custom Service
Set Up a Port Forwarding entry based on your specific ports
Port Forwarding with Translation
Translate a port received on the WAN to a port and IP address on the LAN
Port Fowarding Ranges of Ports
Forward a range of WAN ports to an IP address on the LAN
Trigger Ports
Forward a range of ports to an IP address on the LAN only after specific outbound traffic
next
back
cancel

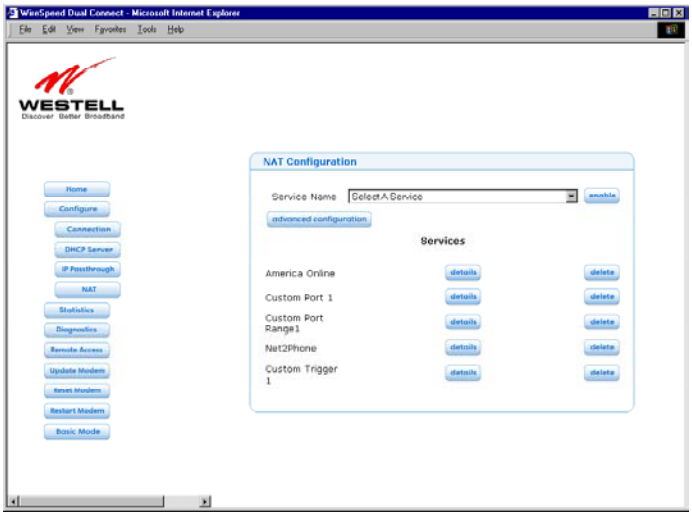

Trigger Ports - Microsoft Internet Explorer
Trigger Ports
Set Up a Trigger Port Forwarding entry based on your specific ports
Service Name:
Custom Trigger 1
The above name will be saved as this Services description
Local 'Trigger' Port:
78
Global Port Range
78 - 81
When outbound traffic is detected on the 'Trigger' Port
Port Forwarding is enabled through the Range
of the Global Ports
next
back
cancel

Service Name	The NAT service you selected.
Local Trigger Port	The local LAN side TCP/UDP port.
Global Port Range	The WAN side TCP/UDP port range.

The screen below displays a message that the NAT service has been added. The setup is complete. Click **done**.

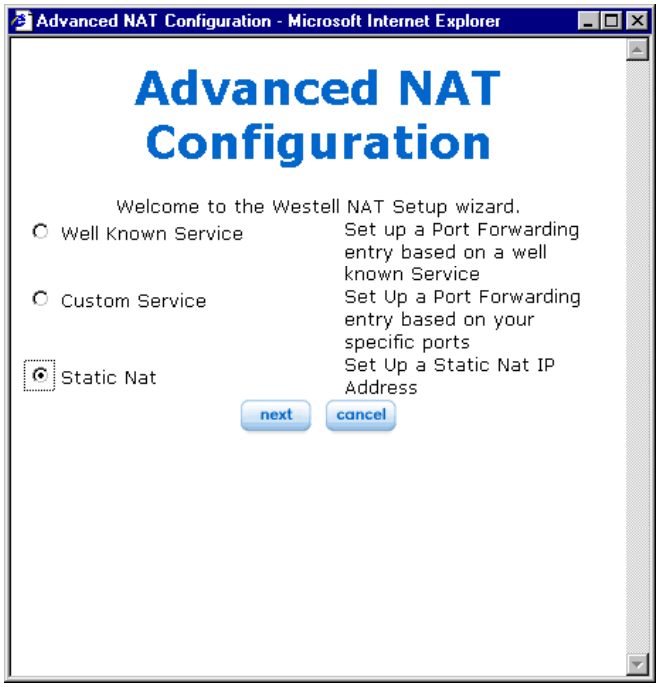


Your custom service will be displayed under **Services** on the NAT screen.

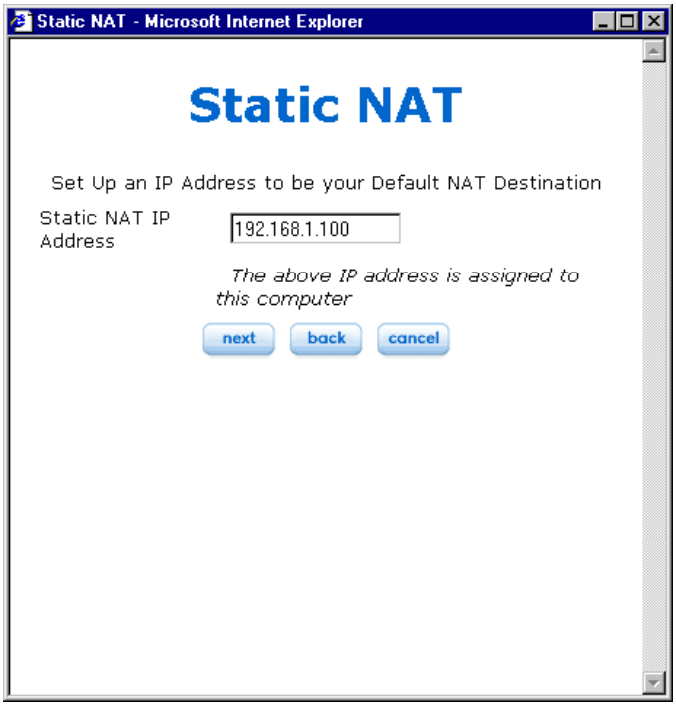


Static NAT

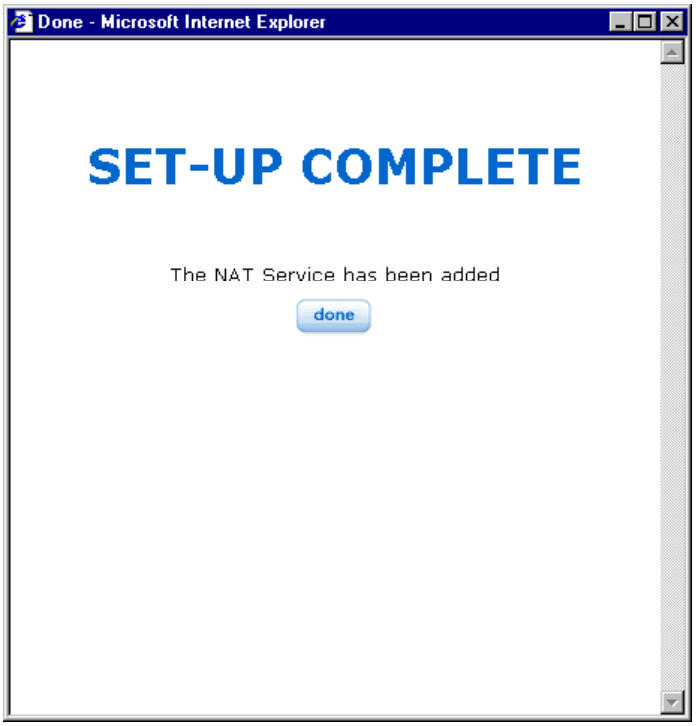
If you select **Static NAT** from the **Advanced NAT Configuration** screen, the following steps will walk you through the process of setting up a static NAT IP address.


Advanced NAT Configuration - Microsoft Internet Explorer
Advanced NAT Configuration
Welcome to the Westell NAT Setup wizard.
Well Known Service
Set up a Port Forwarding entry based on a well known Service
Custom Service
Set Up a Port Forwarding entry based on your specific ports
Static Nat
Set Up a Static Nat IP Address
next
cancel

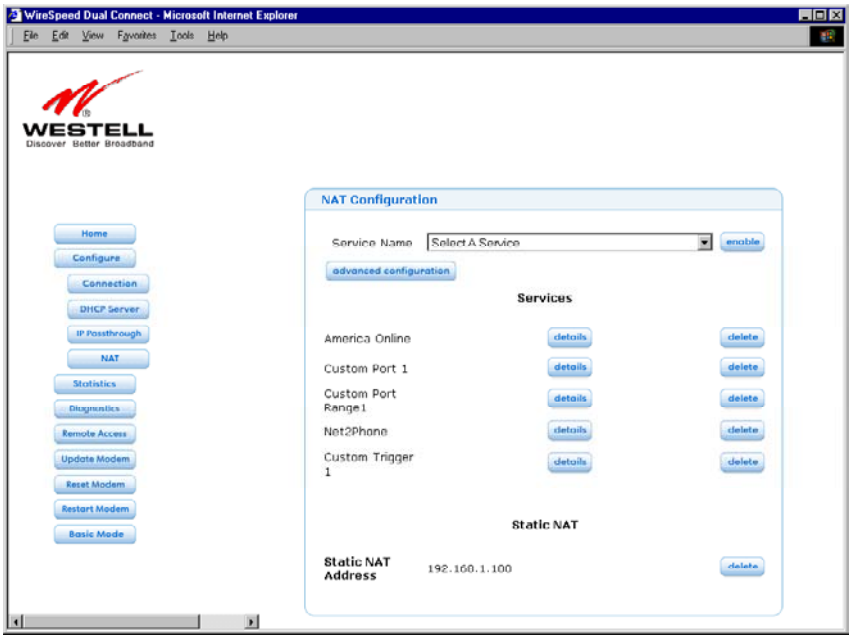
Enter your Static NAT IP address. Click **next**.


Static NAT - Microsoft Internet Explorer
Static NAT
Set Up an IP Address to be your Default NAT Destination
Static NAT IP Address
192.168.1.100
The above IP address is assigned to this computer
next
back
cancel

The screen below displays a message that the NAT service has been added. The setup is complete. Click **done**.



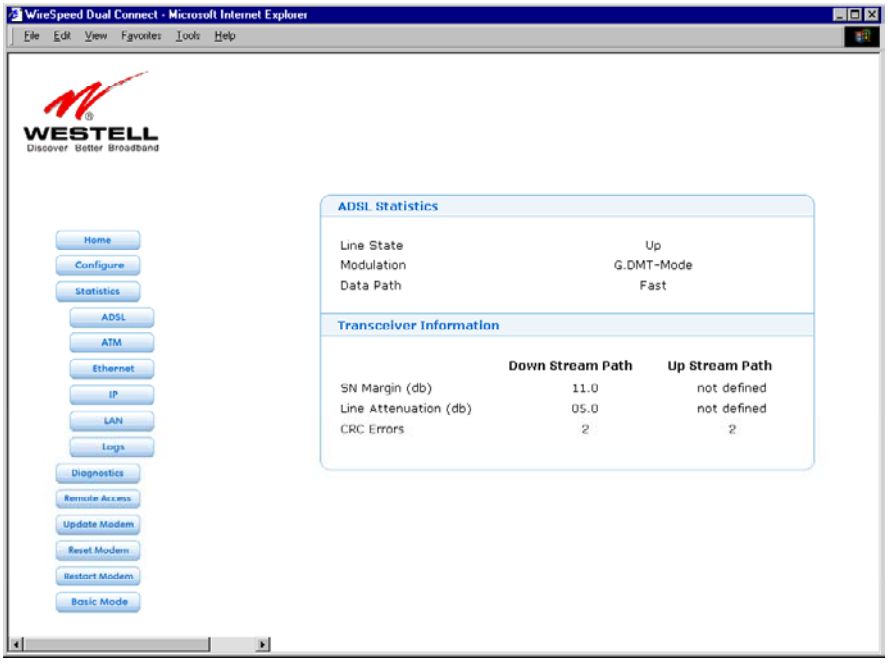
The screen below displays the Static NAT address under the field labeled **Static NAT**.



8.3 Statistics

ADSL Statistics

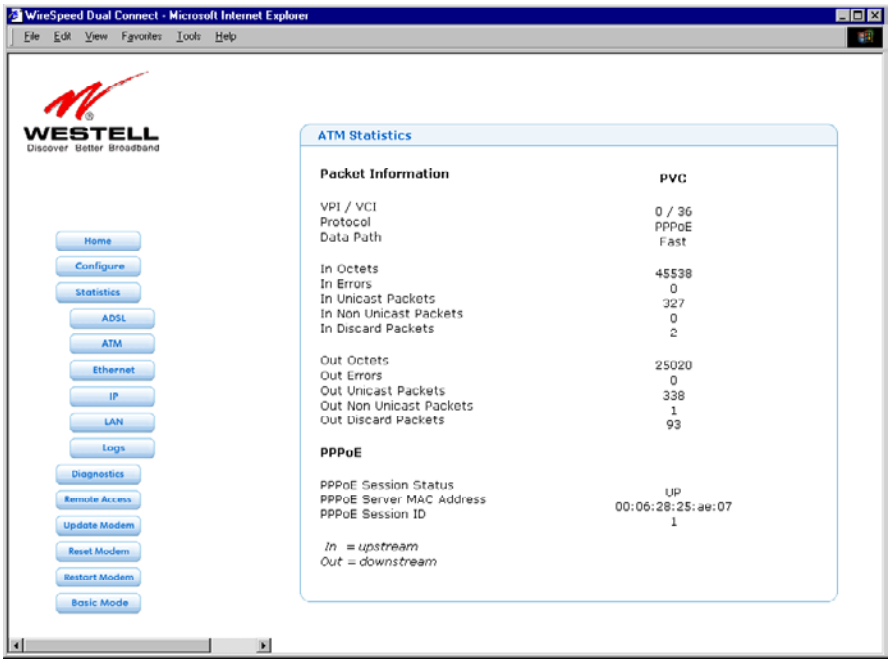
The following screen will be displayed if you select **ADSL** from the **Statistics** menu.



ADSL Statistics	
Line State	The status of your DSL connection: up or down
Modulation	The operational mode. Modes supported are No Mode, Multi Mode, T.1413 Mode, G.DMT Mode, and G.LITE Mode.
Data Path	The data path used (either Fast or Interleaved).
Transceiver Information	
SN Margin (db)	The Signal-to-Noise Ratio (S/N) where 0 db=$1x10^{-7}$, which inhibits your DSL speed
Line Attenuation (db)	The DSL line loss.
CRC Errors	The number of errors in data that has been transmitted on the communications link.

ATM Statistics

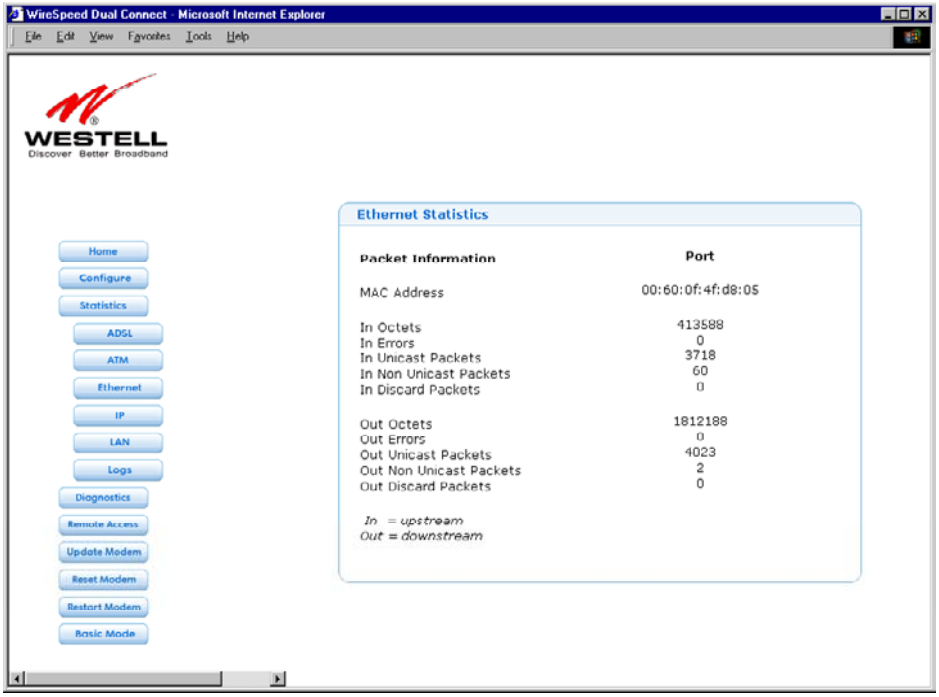
The following screen will be displayed if you select **ATM** from the **Statistics** menu.



Packet Information	
VPI/VCI	Displays the VPI/VCI values obtained from your Service Provider.
Protocol **Note: the configuration specified by our Service Provider will determine which Protocols are available to you.**	Displays the Protocol for each VC, which is specified by your Service Provider. **Possible responses are:** PPPoE = Point to Point Protocol over Ethernet Bridge = Bridge Protocol
Data Path	The data path used (either fast or interleaved).
In Octets	The number of bytes received on the ATM port.
In Errors	The number of error packets received on the ATM port.
In Unicast Packets	The number of Unicast packets received on the ATM port.
In Non Unicast Packets	The number of non-Unicast packets received on the ATM port.
In Discard Packets	The number of discarded packets received.
Out Octets	The number of bytes transmitted on the ATM port.
Out Errors	The number of outbound packets that could not be transmitted due to errors.
Out Unicast Packets	The number of Unicast packets transmitted on the ATM port.
Out Non Unicast Packets	The number of non-Unicast packets transmitted on the ATM port.
Out Discard Packets	The number of outbound packets discarded.
PPPoE	
PPPoE Session Status	UP=PPP session established. DOWN=No PPP session established.
PPPoE Server MAC Address	MAC address of the PPPoE server that provides the session.
PPPoE Session ID	Session ID

Ethernet Statistics

The following screen will be displayed if you select **Ethernet** from the **Statistics** menu.

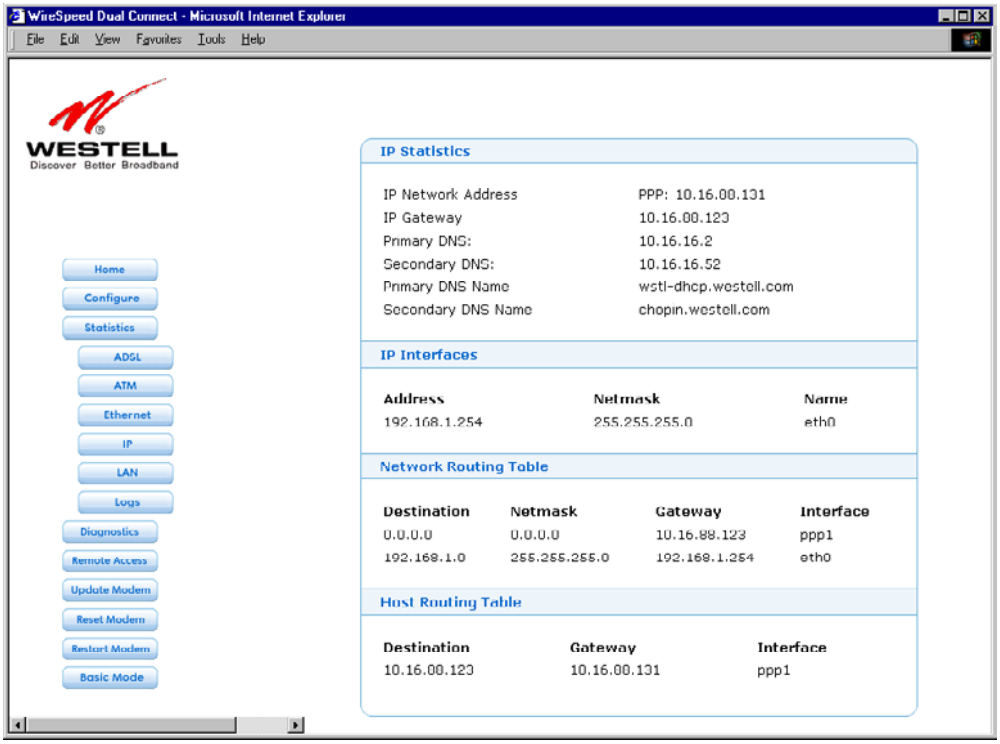


MAC Address	MAC address of this modem (same as your network adapter).
In Octets	The number of bytes received on the ATM port.
In Errors	The number of error packets received on the ATM port.
In Unicast Packets	The number of Unicast packets received on the ATM port.
In Non Unicast Packets	The number of non-Unicast packets received on the ATM port.
In Discard Packets	The number of discarded packets received.
Out Octets	The number of bytes transmitted on the ATM port.
Out Errors	The number of outbound packets that could not be transmitted due to errors.
Out Unicast Packets	The number of Unicast packets transmitted on the ATM port.
Out Non Unicast Packets	The number of non-Unicast packets transmitted on the ATM port.
Out Discard Packets	The number of outbound packets discarded.

IP Statistics

The following screen will be displayed if you select **IP** from the **Statistics** menu.

NOTE: The IP menu option and this screen will not be available if you are in Bridge mode.

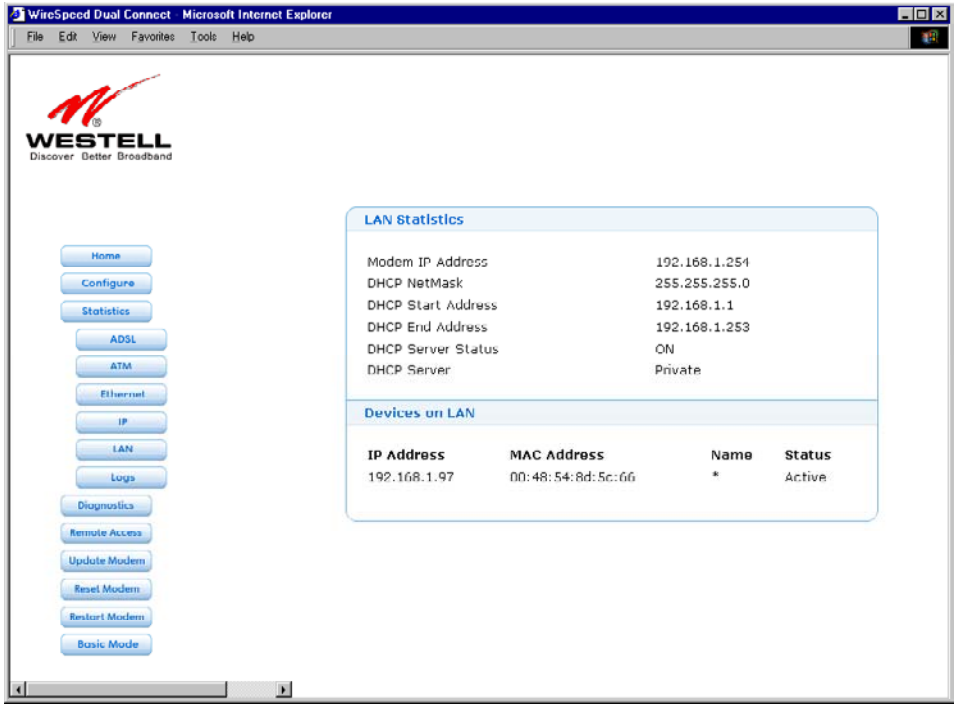


IP Statistics	
IP Network Address	Displays the IP network address that your modem is on
IP Gateway	Displays the modem IP gateway address
Primary DNS Name	Name of primary DNS server
Secondary DNS Name	Name of secondary DNS server

IP Interfaces displays information on all IP interfaces. **Network Routing Table** displays information on all network routes. **Host Routing Table** displays information on all local network routes.

LAN Statistics

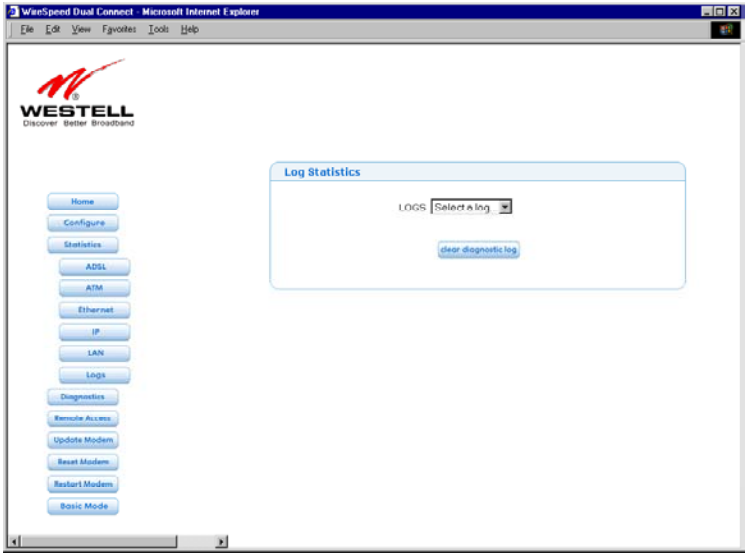
The following screen will be displayed if you select **LAN** from the **Statistics** menu.



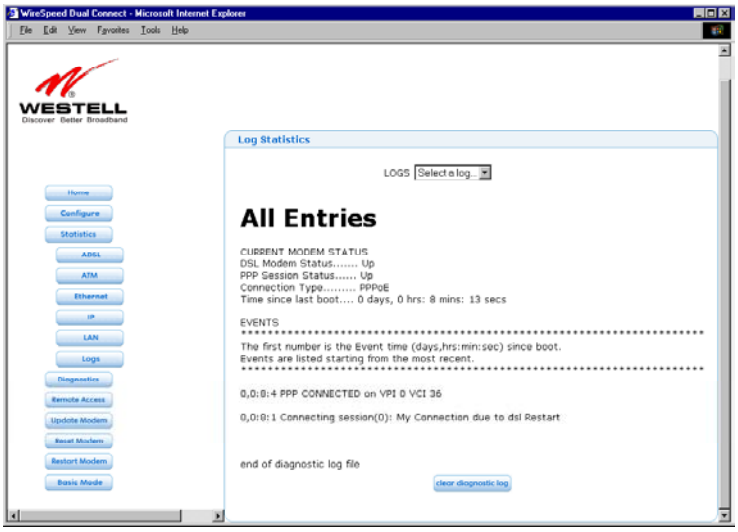
LAN Statistics	
Modem IP Address	Displays the Dual Connect Modem's IP address
DHCP NetMask	This setting specifies the subnet mask to use to determine if an IP address belongs to your local network.
DHCP Start Address	Displays the starting DHCP Address. Dynamic Host Configuration Protocol automatically assigns IP addresses to devices added to our LAN (Local Area Network).
DHCP End Address	This setting specifies the end address of the IP address pool used for automatic configuration of local devices.
DHCP Server Status	Displays the status of the DHCP server Possible responses are: **ON**=DHCP server is enabled **OFF**=DHCP server is disabled
DHCP Server	Displays the status of the DHCP server Possible responses are: **Private** = DHCP server is enabled **OFF** = DHCP server is disabled
Devices on LAN	Displays information about the devices on the LAN

Log Statistics

The following screen will be displayed if you select **Logs** from the **Statistics** menu.

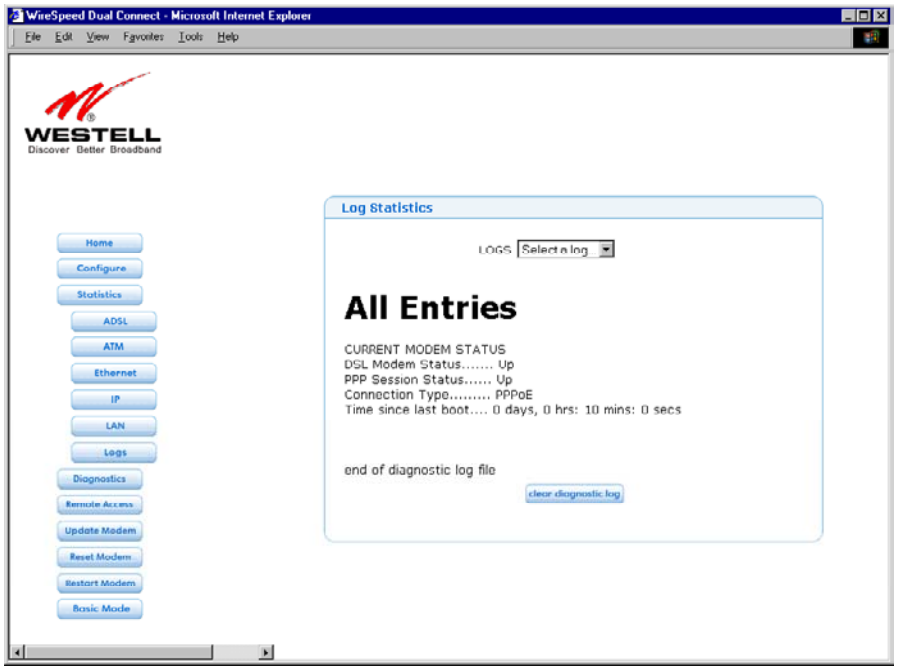


Select **All Entries** from the **LOGS** menu to view all Log entries in the Log Statistic. Click on **clear diagnostic log** to clear the Log Statistics.


WireSpeed Dual Connect - Microsoft Internet Explorer
File Edit View Favorites Tools Help
WESTELL
Discover Better Broadband
Log Statistics
LOGS Select a log
All Entries
CURRENT MODEM STATUS
DSL Modem Status..... Up
PPP Session Status..... Up
Connection Type..... PPPoE
Time since last boot.... 0 days, 0 hrs: 8 mins: 13 secs
EVENTS
The first number is the Event time (days,hrs:min:sec) since boot.
Events are listed starting from the most recent.
0,0:0:4 PPP CONNECTED on VPI 0 VCI 36
0,0:0:1 Connecting session(0): My Connection due to dsl Restart
end of diagnostic log file
clear diagnostic log

If you clicked on **clear diagnostic log**, the following pop-up screen will appear. Click on **OK** to clear the contents of the diagnostic log.

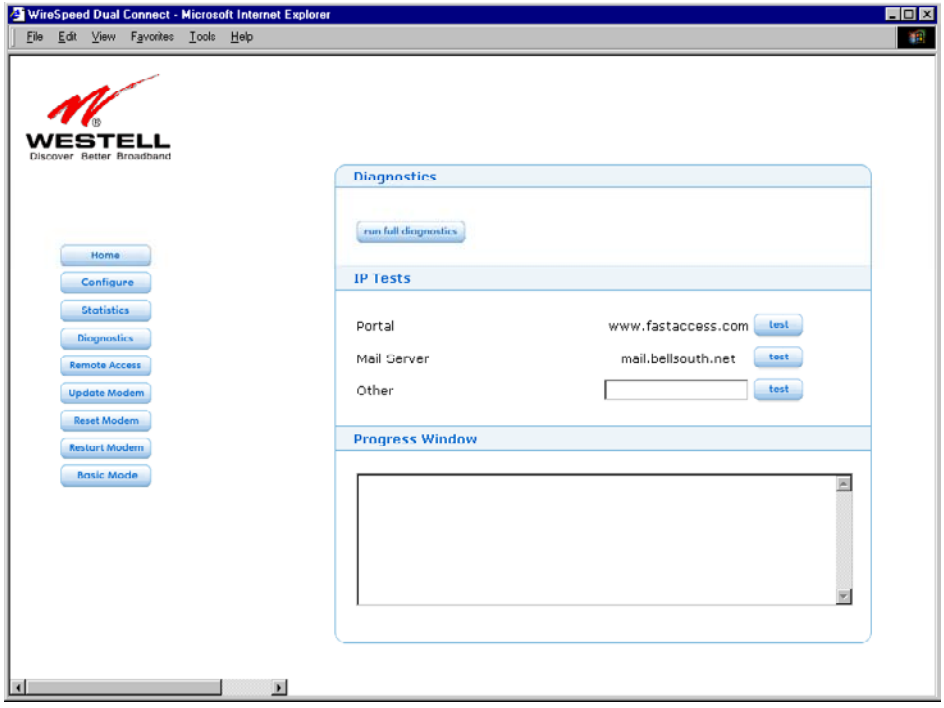
The following screen will be displayed if you clicked on **OK** in the **Clear contents of Diagnostic Log** screen.



8.4 Diagnostics

The following screen will be displayed if you select **Diagnostics** from the homepage menu. Refer to section 7.4 for details on the **Remote Access** feature

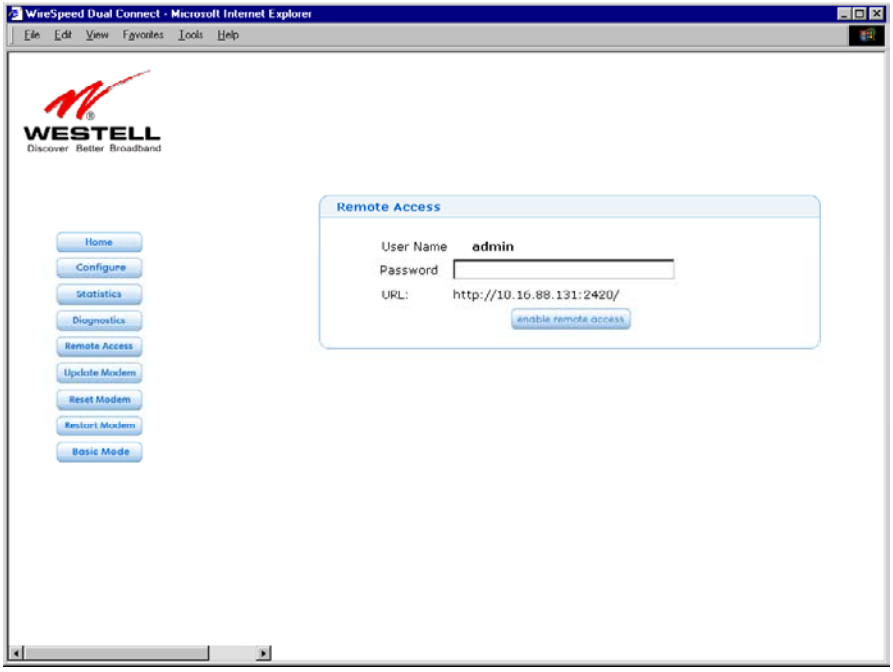
NOTE: The Diagnostics menu option will not be available if you are in Bridge mode.



8.5 Remote Access

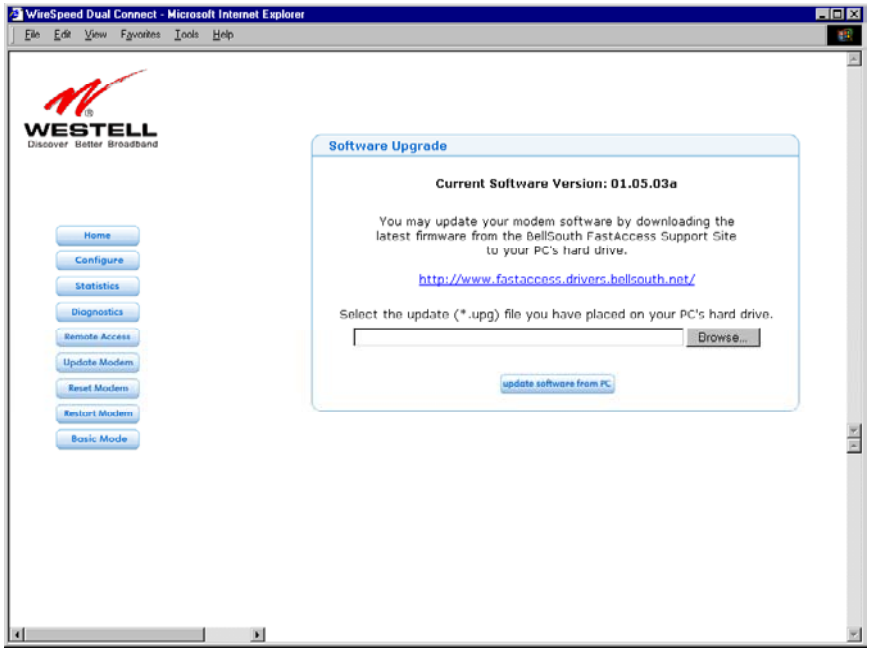
The following screen will be displayed if you select **Remote Access** from the homepage menu. Refer to section 7.5 for details on the **Remote Access** feature.

NOTE: The Remote Access menu option will not be available if you are in Bridge mode.



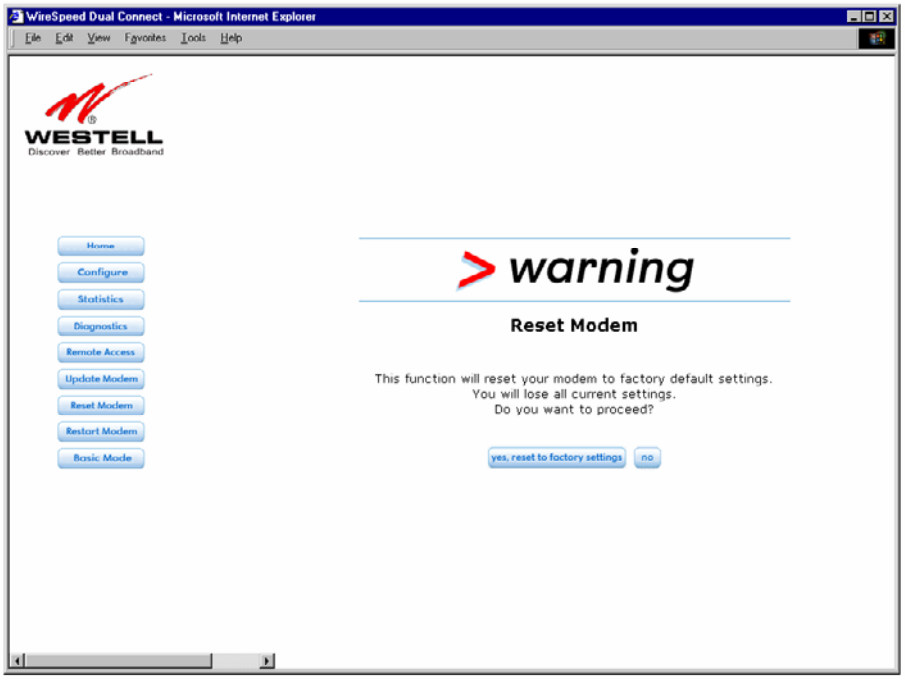
8.6 Update Modem

The following screen will be displayed if you select **Update Modem** from the homepage menu. Refer to section 7.6 for details on the **Update Modem** feature.



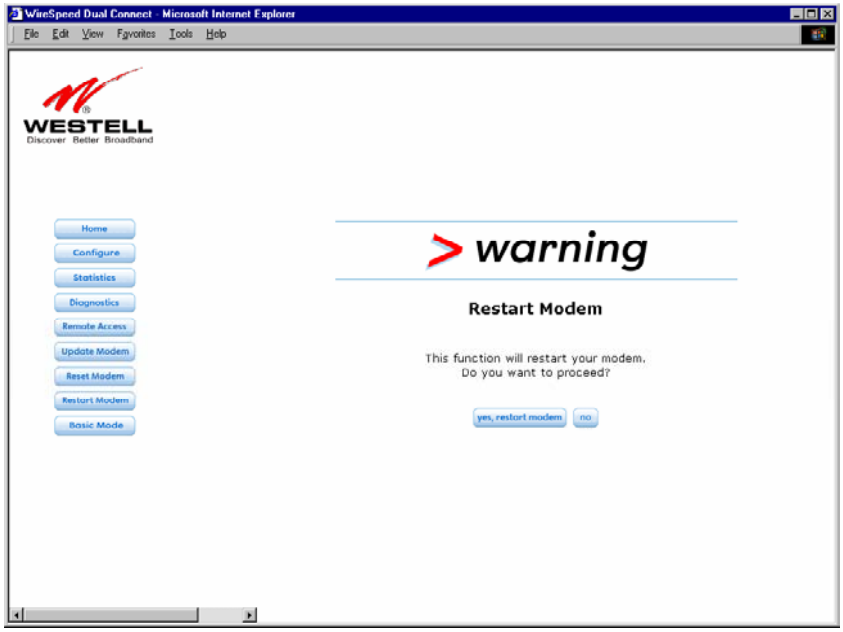
8.7 Reset Modem

The following screen will be displayed if you select **Reset Modem** at the homepage menu. Refer to section 7.7 for details on the **Reset Modem** feature.

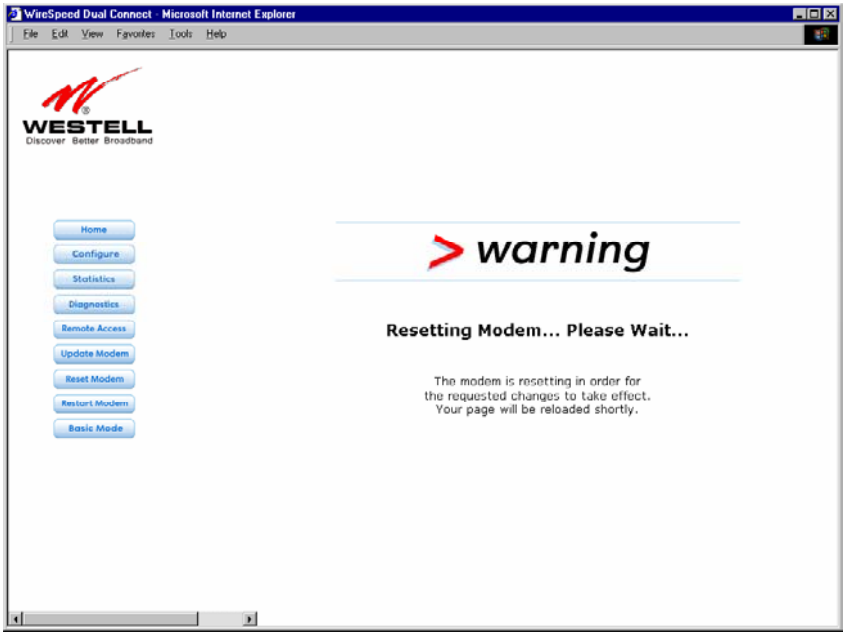


8.8 Restart Modem

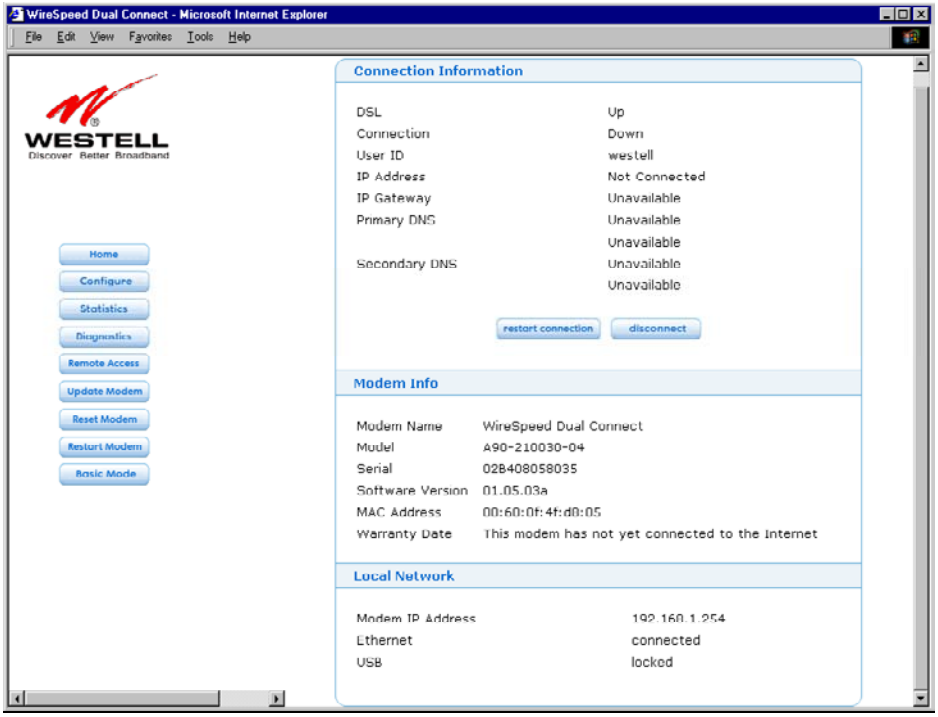
The following screen will be displayed if you select **Restart Modem** at the homepage menu. Click on **yes, restart modem** to reboot you modem. Click on **no** if you do not want to reboot the modem at this time.



If you clicked on **yes, restart modem**, the following screen will be displayed. It shows that the modem is resetting.



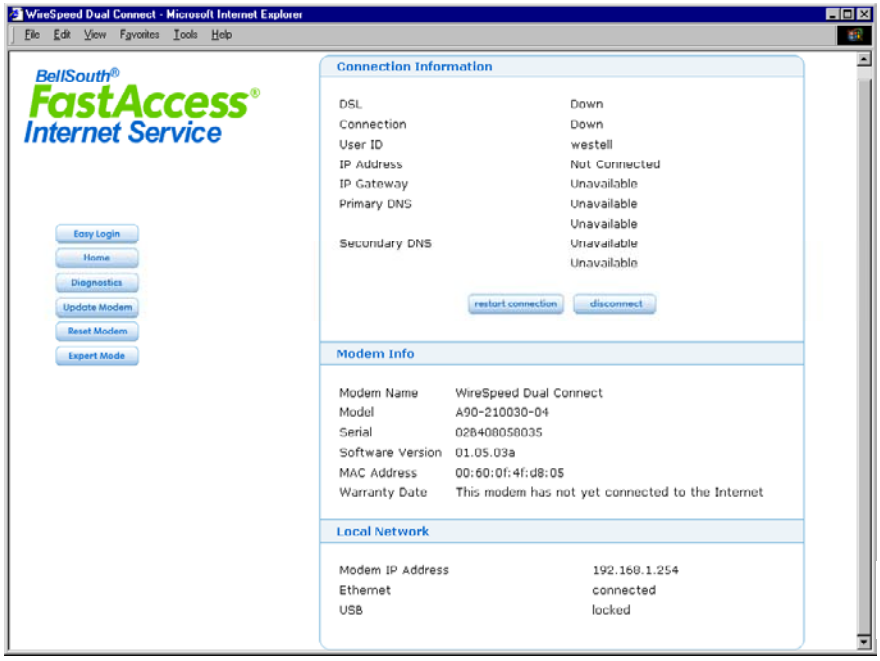
After the modem has finished resetting, the following Home Page will be displayed.



Connection Info.	
DSL	**Up** = DSL connection established **Down** = No DSL connection established
Connection	**Up** = PPPoE session established **Down** = No PPPoE session established
User ID	Displays current User ID (provided by your Internet Service Provider)
IP Address	Displays the IP network address that your modem is on
IP Gateway	Displays the modem's IP Gateway address
Primary DNS	Provided by your Service Provider
Secondary DNS	Provided by your Service Provider
Modem Info.	
Modem Name	Name of the Modem
Model	Model Number of the Modem
Serial	Serial Number of the Modem
Software Version	Current Software Version
MAC Address	Modem MAC address
Warranty Date	Warranty Date of the Modem
Local Network	
Modem IP Address	Displays the local IP network address that your modem is on
Ethernet	**connected** = Modem is connected to the PC via Ethernet **not connected** = Modem is not connected **locked** = Modem is connected to the PC via USB
USB	**connected** = Modem is connected to the PC via USB **not connected** = Modem is not connected **locked** = Modem is connected to the PC via Ethernet

8.9 Basic Mode

If you click on **Basic Mode** at the homepage menu, the BellSouth® FastAccess® Home Page will be displayed.



8.10 NAT Services

For your convenience, the Westell Dual Connect Modem supports protocols for Applications, Games, and VPN-specific programs. Table 6 provides protocol information for the services that are supported by your Dual Connect Modem.

Note: To configure your Dual Connect Modem for a service or application, follow the steps described in the Advanced NAT Configuration section of this User Guide.

Table 6. Applications/Games/VPN Support

Application/Game	Port/Protocol
Aliens vs. Predator	80 UDP, 2300 UDP, 8000-8999 UDP
America Online	5190 TCP/UDP
Anarchy Online	7013 TCP/UDP, 7500-7501 TCP/UDP
AOL Instant Messenger	4099 TCP, 5190 TCP
Asheron's Call	9000-9013 UDP
Battlecom	2300-2400 TCP/UDP, 47624 TCP/UDP
Black and White	2611-2612 TCP, 6667 TCP, 6500 UDP, 27900 UDP
Blizzard Battle.net (Diablo II)	4000 TCP, 6112 TCP/UDP
Buddy Phone	700, 701 UDP
Bungie.net, Myth, Myth II Server	3453 TCP
Calista IP Phone	3000 UDP, 5190 TCP
Citrix Metaframe	1494 TCP
Client POP/IMAP	110 TCP
Client SMTP	25 TCP
Counter Strike	27015 TCP/UDP, 27016 TCP/UDP
Dark Reign 2	26214 TCP/UDP
Delta Force (Client and Server)	3568 UDP, 3100-3999 TCP/UDP
Delta Force 2	3568-3569 UDP
DeltaForce: Land Warrior	UDP 53 TCP 21 TCP 7430 TCP 80 UDP 1029 UDP 1144 UDP 65436 UDP 17428
DNS	53 UDP
Elite Force	2600 UDP, 27500 UDP, 27910 UDP, 27960 UDP
Everquest	1024-7000 TCP/UDP
F-16, Mig 29	3863 UDP
F-22 Lightning 3	4660-4670 TCP/UDP, 3875 UDP, 4533-4534 UDP, 4660-4670 UDP
F-22 Raptor	3874-3875 UDP
Fighter Ace II	50000-50100 TCP/UDP
Fighter Ace II for DX play	50000-50100 TCP/UDP, 47624 TCP, 2300-2400 TCP/UDP
FTP	20 TCP, 21 TCP
GameSpy Online	UDP 3783 UDP 6515 TCP 6667 UDP 12203 TCP/UDP 13139

Application/Game	Port/Protocol
	UDP 27900 UDP 28900 UDP 29900 UDP 29901
Ghost Recon	TCP 80 UDP 1038 UDP 1032 UDP 53 UDP 2347 UDP 2346
GNUtella	6346 TCP/UDP, 1214 TCP
Half Life Server	27005 UDP(client only) 27015 UDP
Heretic II Server	28910 TCP
Hexen II	26900 (+1) each player needs their own port. Increment by one for each person
Hotline Server	5500, 5503 TCP 5499 UDP
HTTPS	443 TCP/UDP
ICMP Echo	4 ICMP
ICQ OLD	4000 UDP, 20000-20019 TCP
ICQ 2001b	4099 TCP, 5190 TCP
ICUII Client	2000-2038 TCP, 2050-2051 TCP, 2069 TCP, 2085 TCP, 3010-3030 TCP
ICUII Client Version 4.xx	1024-5000 TCP, 2050-2051 TCP, 2069 TCP, 2085 TCP, 3010-3030 TCP, 2000-2038 TCP6700-6702 TCP, 6880 TCP, 1200-16090 TCP
IMAP	119 TCP/UDP
IMAP v.3	220 TCP/UDP
Internet Phone	22555 UDP
IPSEC ESP	PROTOCOL 50
IPSEC IKE	500 UDP
Ivisit	9943 UDP, 56768 UDP
KALI, Doom & Doom II	2213 UDP, 6666 UDP (EACH PC USING KALI MUST USE A DIFFERENT PORT NUMBER STARTING WITH 2213 + 1
KaZaA	1214 TCP/UDP
Limewire	6346 TCP/UDP, 1214 TCP
Medal Of Honor: Allied Assault	TCP 80 UDP 53 UDP 2093 UDP 12201 TCP 12300 UDP 2135 UDP 2139 TCP/UDP 28900
mIRC Chat	6660-6669 TCP
Motorhead Server	16000 TCP/UDP, 16010-16030 TCP/UDP
MSN Game Zone	6667 TCP, 28800-29000 TCP
MSN Game Zone (DX 7 & 8 play)	6667 TCP, 6073 TCP, 28800-29000 TCP, 47624 TCP, 2300-2400 TCP/UDP
MSN Messenger	6891-6900 TCP, 1863 TCP/UDP, 5190 UDP, 6901 TCP/UDP

Application/Game	Port/Protocol
Napster	6699 TCP
Need for Speed 3, Hot Pursuit	1030 TCP
Need for Speed, Porsche	9442 UDP
Net2Phone	6801 UDP
NNTP	119 TCP/UDP
Operation FlashPoint	47624 UDP, 6073 UDP, 2300-2400 TCP/UDP, 2234 TCP
Outlaws	5310 TCP/UDP
Pal Talk	2090-2091 TCP/UDP, 2095 TCP, 5001 TCP, 8200-8700 TCP/UDP, 1025-2500 UDP
pcAnywhere host	5631 TCP, 5632 UDP, 22 UDP
Phone Free	1034-1035 TCP/UDP, 9900-9901 UDP, 2644 TCP, 8000 TCP
Quake 2	27910 UDP
Quake 3	27660 UDP Each computer playing QuakeIII must use a different port number, starting at 27660 and incrementing by 1. You'll also need to do the following: 1. Right click on the QIII icon 2. Choose "Properties" 3. In the Target field you'll see a line like "C:\Program Files\Quake III Arena\quake3.exe" 4. Add the Quake III net_port command to specify a unique communication port for each system. The complete field should look like this: "C:\Program Files\Quake III Arena\quake3.exe" +set net_port 27660 5. Click OK. 6. Repeat for each system behind the NAT, adding one to the net_port selected (27660,27661,27662)
Quicktime 4/Real Audio	6970-32000 UDP, 554 TCP/UDP
Rainbow Six & Rogue Spear	2346 TCP
Real Audio	6970-7170 UDP
Return To Castle Wolfenstein	27960 TCP/UDP
Roger Wilco	TCP/UDP 3782 UDP 3783 (BaseStation)
ShoutCast Server	8000-8005 TCP
SSH Secure Shell	22 TCP/UDP
Starcraft	2346 TCP
Starfleet Command	2300-2400 TCP/UDP, 47624 TCP/UDP
Telnet	23 TCP
Tiberian Sun & Dune 2000	1140-1234, 4000 TCP/UDP
Ultima Online	5001-5010 TCP, 7775-7777 TCP, 8800-8900 TCP, 9999 UDP, 7875 UDP
Unreal Tournament server	7777 (default gameplay port) 7778 (server query port 7779,7779+ are allocated dynamically for each helper UdpLink objects, including UdpServerUplin objects. Try starting with 7779-7781 and add ports if needed 27900 server query, if master server uplink is enabled. Home master servers use other ports like 27500 Port 8080 is for UT Server Admin. In the [UWeb.WebServer] section of the server.ini file, set the ListenPort to 8080 and ServerName to the IP assigned to the Modem from your ISP.
USENET News Service	143 TCP
VNC, Virtual Network Computing	5500 TCP, 5800 TCP, 5900 TCP

Application/Game	Port/Protocol
Westwood Online, C&C	4000 TCP/UDP, 1140-1234 TCP/UDP
World Wide Web (HTTP)	80 TCP 443 TCP (SSL) 8008 OR 8080 TCP (PROXY)
Yahoo Messenger Chat	5000-5001 TCP
Yahoo Messenger Phone	5055 UDP
VPN Protocol	**Comments**
IPSec Encryption	IPSec using AH can not be supported through NAT. IPSec using ESP and L2TP can be supported via an ALG
L2TP	IPSec using ESP and L2TP can be supported via an ALG.
PPTP	Works through NAT.

9. PRODUCT SPECIFICATIONS

ADSL
- DSL Line Code: Discrete Multi-Tone (DMT)
- DSL Rates: 32 kbps to 8 Mbps downstream and 32 kbps to 800 Kbps upstream
- Power spectral density: -40 dBm/Hz
- DSL Impedance: 100 Ohms
- DSL Performance: Performance: per G.992.1, ANSI T1.413.

Protocol Features
- Bridge Encapsulation per RFC2684 (Formerly RFC1483)
- Logical Link Control/ Subnetwork Access Protocol (LLC/SNAP)
- Software Upgradeable
- PPPoE Support
- ATM SAR: Internal to Modem

System Requirements for USB
- Pentium Class PC or above
- Microsoft Windows 98, 2000, ME, or XP installed
- Operating system CD
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 32 MB RAM
- 10 MB of free hard drive space
- USB Version 1.0 or 1.1 compliant bus

System Requirements for 10/100 Base-T/Ethernet
- Pentium Class PC or above
- Microsoft Windows 95, 98, 2000, ME, NT 4.0, or XP installed
- Operating system CD
- 32 MB RAM
- Ethernet 10/100 Base-T interface
- 10 MB of free hard drive space
- TCP/IP Protocol installed

Dimensions
- Height: 1.6 in. (4.0 cm)
- Width: 6.3 in. (16.0 cm)
- Depth: 5.07 in. (12.8 cm)

Weight
- Approx. 2.0 lbs. (.90 kg)

Environmental
- Ambient Operating Temperature: +32 to +104°F (0 to +40°C)
- Relative Humidity: 5 to 95%, non-condensing

Power Supply
- 120 VAC to 12 VAC wall-mount power supply

Power Consumption
- Less than 8 watts typical, from 120 VAC

Connectors
- Power connector
- DSL/LINE: 6-pin modular jack
- PC: USB Series B connector
- Ethernet: 8-pin RJ-45 modular jack

EMC Compliance
- FCC, Part 15 Class B

Safety
- Conforms to UL Standard 60950, 3rd Edition
- Certified to CAN/CSA Standard C222.2 No. 60950

Regulatory Approval
- UL
- CSA
- FCC, Part 68
- Industry Canada CS03

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11. PUBLICATION INFORMATION

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